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THE OFFICIAL

ARMY INFORMATION DIGEST

MAGAZINE

OCTOBER 1960

ARMY INFORMATION DIGEST



THE OFFICIAL MAGAZINE OF
THE DEPARTMENT OF THE ARMY

The mission of ARMY INFORMATION DIGEST is to keep personnel of the Army aware of trends and developments of professional concern. The Digest is published under supervision of the Army Chief of Information to provide timely and authoritative information on policies, plans, operations, and technical developments of the Department of the Army to the Active Army, Army National Guard, and Army Reserve. It also serves as a vehicle for timely expression of the views of the Secretary of the Army and the Chief of Staff and assists in the achievement of information objectives of the Army.

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COVERS: These two illustrious Pershings—giants among men and weapons, born a century apart—each exert enormous impact. The name of the revered AEF commander whose forces broke the World War I stalemate is today borne by the Army's nuclear-capable ballistic missile.

COMMAND LINE

ON ARMY UNITY

"We no longer differentiate in an ultimate sense between Army, National Guard, and Reserve forces. Every energy of the War Department is bent to the development of the Army of the United States. Our purpose is to think only of the American citizen who is to be a soldier in that Army and to prepare him in time of peace for his duties in war."

*General of the Armies John J. Pershing
while Army Chief of Staff, 1922*

ON MILITARY SUPPORT OF FOREIGN POLICY

"Our military policy for the support of our foreign policy, today and for the future, must be extremely flexible. It must be supported by the forces needed to counter the entire range of the Communist threat. These forces, together with those of our Allies, must be capable of deterring or fighting any war—large or small—in such manner as to achieve our basic national security objective: a stable, lasting, and honorable world peace."

*General George H. Decker, Vice Chief of Staff
before Alumni Association of Lafayette College
Philadelphia, Pennsylvania, 22 April 1960*

ON WEAPONS OBSOLESCENCE

"Obsolescence has real meaning to us in the military. Today, in a measure greater than ever before in history, operational weapons are hardly off the production line before they are obsolete. A parallel problem with which we struggle is the fact that technology actually obsolesces some weapons even in the stage of development—and before they ever get into production.

"Every effort is made to avoid this seeming waste of time, effort, and money through the closest possible military-science-industry teamwork, but progress sometimes outpaces production and the problem is a continuing one. In this battle of safeguarding the tax dollar, I am helped by the realization that it is unquestionably safer in the long run, and cheaper, to build weapons and not use them than it is to need weapons—and not have them."

*Lieutenant General Arthur G. Trudeau,
Chief of Army Research and Development
at General Electric Advanced Electronic Center
Ithaca, New York, 16 June 1960*

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Centennial

of a distinguished Army leader -

John J. Pershing—The Human Side

A. A. Hoehling

HOW do we remember General Pershing? Ramrod figure of an officer? Cavalryman's cavalryman? Stern disciplinarian? Rallying leader of the American Expeditionary Forces? Chief of Staff? General of the Armies?

As the centennial of his birth is observed this September 13, even those who revere his memory will in all likelihood think of John Joseph Pershing as a symbol and a monolith, with the detached admiration for a statue in the park.

Few—perhaps only one or two who survive—will think of General Pershing as a man of flesh and blood, of compassion, of profound

depths of kindness and decency, a man whose personal heartbreak shaped his own destiny and helped alter history.

Who is alive today to recall the long-ago afternoon in Memphis when Pershing stood speechless, his cheeks tear-streaked, all because a little girl had handed him a bouquet of flowers?

Who can still testify as to those several nights in France towards the war's end when an exhausted Commander-in-Chief buried his head in his hands and almost sobbed, "God, I sometimes wonder how I can go on. . ."

Indeed, when he led the doughboys to France, his wife and three little daughters had been dead less than two years, victims of a fire in the Presidio of San Francisco.

For that matter, who of this generation can readily believe the

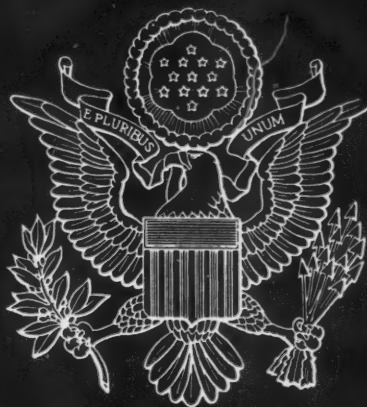
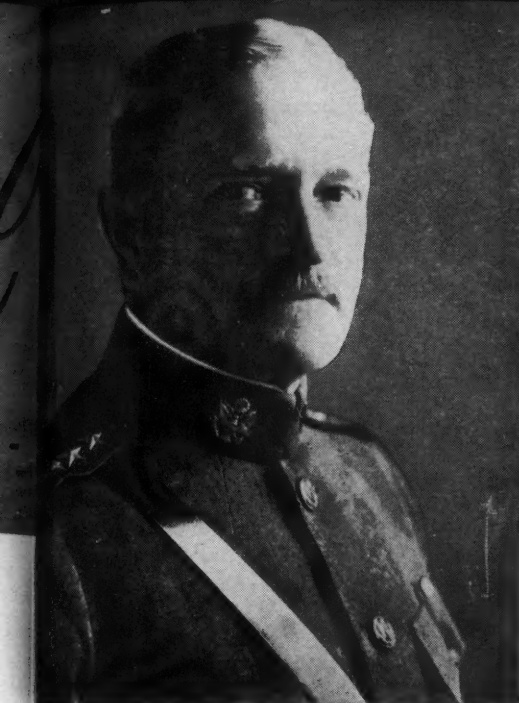
A. A. HOEHLING, an editor with Army Times Publishing Company, was project editor of a forthcoming biography on General Pershing, "The Yanks are Coming." He is author of books on the Civil War and World War I periods, the latest being "The Fierce Lambs," a study of the First Division in 1917.

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tender entries in his personal diary at the time of his wedding, "Frances is the dearest, sweetest girl in the world. . ."

How many veterans can attest to the continual visits their General paid to base hospitals in France, and his rage directed at the incompetence which, by his direct reasoning, prolonged strife and bloodshed?

"The war," he asserted, "shall be won without delay! All antiquated methods are taboo. . . Germany can be beaten, Germany must be beaten, Germany will be beaten."

In a time of cynicism and expediency, it was Pershing who fought for the entity of the A.E.F. and the dignity of the individual American fighting man. It was Pershing who had the courage and the conviction to call for the formation of a separate and distinct American Army

in France, overcoming the insistence of French Marshal Foch and British Field Marshal Haig to use doughboys as "replacements."

What general since has been confronted with such far-reaching moral decisions in time of crisis?

Nor did he forget his "boys" after the war. Even when he needed a cane to help him about, he was a familiar visitor in the Nation's veterans hospitals. For those left behind in France, Pershing, as head of the American Battle Monuments Commission, helped design beautiful military cemeteries as perpetual memorials.

A HUNDRED years is a long time, and who is mindful whence Pershing appeared? Do we think of him as a product of the plains, an infant growing up in the brawling days of the Civil War?

Pershing—The Human Side



A career that spanned the days of Indian fighting on the Western Frontier to commanding the American Expeditionary Forces on the Western Front in World War I, then years of blueprinting the future growth of the United States Army—that briefly is the story of John Joseph Pershing. He entered West Point in 1882, above. As a young captain in 1901, left above, he was in the Philippines fighting insurrectionists. Right above, he is a Brigadier General chasing the bandit Villa in Mexico, 1916.

Do we associate the lean, studious Missourian with the heritage of the frontier, with Jackson and Boone and Davy Crockett?

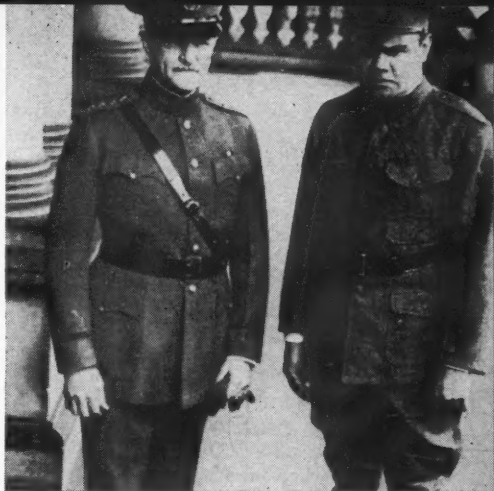
Or, does he persist as the more formalized embodiment of the military—the general officer who invariably materialized in moments of acute national need? Was he George Washington, or Grant, or Sherman all over again?

Would he not make Chateau-Thierry, Belleau Wood and the Argonne ring pridefully in American history along with Saratoga, Yorktown, the Alamo and Appomattox Courthouse?

WHAT manner of man was General Pershing?

Fighter in the final Indian campaigns, hero of San Juan Hill, soldier and peacemaker in the Philippines, disclaimer of the Medal of Honor, pursuer of Villa, blue-printer of today's Army when he was Chief of Staff.

General of the Armies, military symbol to be sure, disciplinarian



Two great Yanks of World War I era meet in this rare picture of the leader of the AEF with Babe Ruth, Yankee slugger.

because he himself submitted to discipline, who knew that the world historically offered no middle ground between the extremes of order and chaos.

What manner of man was General Pershing?

A man with his thoughts and his dreams, his hopes and even uncertainties. A man admired and respected, but always a bit feared.

On Bastille Day, 14 July 1919, General of the Armies John J. Pershing led victorious American Army that he commanded in World War I down the Champs Elysees.



Pershing—The Human Side

There were those of the A.E.F. standing at attention during what seemed the Commander-in-Chief's interminable reviews who could swear he was a machine wearing four silver stars, a heartless robot which, once wound up, would clank on and on and on. . . .

Perhaps, years later, they were surprised when he was quoted as asserting, "When the last bugle sounds I want to stand up with my soldiers."

He meant it. Not only is he buried in the midst of them in Arlington National Cemetery, but his is the only ranking officer's grave marked with a regulation private's headstone.

What manner of man was General Pershing?

A man of warmth and of im-

mense, almost suffocating loneliness. A man who loved children and flowers and the eternal magic when spring suddenly burst from the winter's cerement of ice and seemingly dead brown earth.

A man who, every birthday, received upon his desk at the War Department a large wicker basket of red roses, tagged simply, "From a friend."

This Memorial Day 1960, flanked by floral tributes from veterans organizations throughout the country, the same sized basket of red roses was beside the marker stone of the General of the Armies.

THERE ARE those who still remember John Joseph Pershing, the man—and remembering can still love him.

Milestones in the life of

General of the Armies John J. Pershing

13 September 1860—15 July 1948

THE Commander-in-Chief of the American Expeditionary Forces in World War I was born in Laclede, Missouri, on 13 September 1860. Decendant of generations of pioneers and settlers, he grew up under the hard, semi-frontier conditions of that border state, witnessing the bitter divisions of civil war and its aftermath.

Beginning at age 18, Pershing taught school, with hitches of spare-time farm work to help support eight younger brothers and sisters. His military career began in 1882, when he was selected for West Point. He was commissioned a 2d Lieutenant in the Cavalry on 1 July 1886.

Pershing's early military service included action against the Apache Indians in New Mexico from 1886 to 1890, and against the Sioux in South Dakota in 1890.

He was Professor of Military Science and Tactics at the University of Nebraska from 1891 to 1895, followed by staff duty

at Army Headquarters in Washington. In 1897 he became Assistant Instructor of Tactics at West Point. He served in Cuba with the 10th Cavalry in 1898, distinguishing himself in the Santiago campaign.

Following staff duty in Washington until 1899, Pershing was transferred to the Philippines upon his own request. There he was engaged in staff and in combat duty in Zamboanga, Mindanao, and Iligan. During this period, he participated in many campaigns against the Moros.

From 1903 to 1905, Pershing held staff positions and attended the Army War College. He was appointed Military Attache in Japan in 1905, and witnessed the Manchurian campaign as an official observer during the Russo-Japanese War.

A HIGH POINT in John J. Pershing's life was his promotion to Brigadier General at the age of 46 upon the personal recommendation of President Theodore

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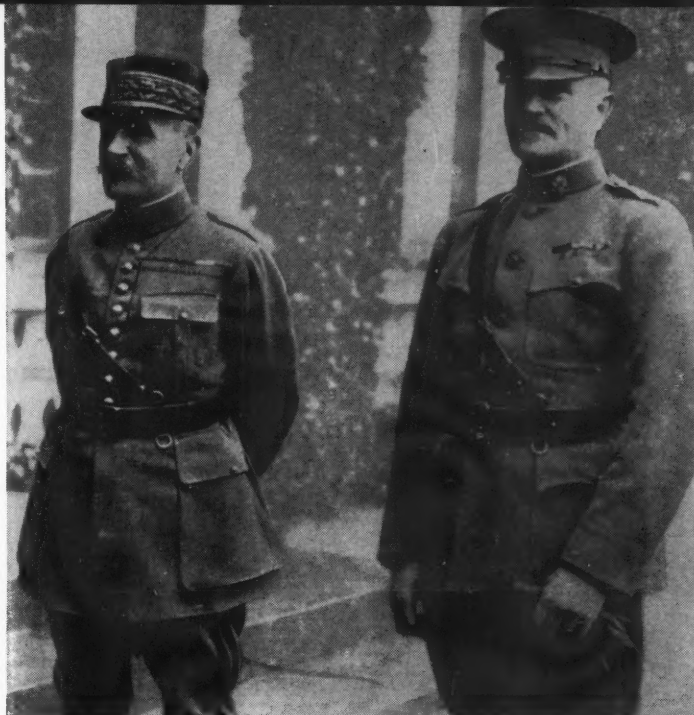
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As Commander-in-Chief of the AEF, he is visited by Gen. Foch at headquarters in Chaumont, June 1918.



Roosevelt in 1906. His future eminence was now to be surmised, although none could foresee the pinnacle to which he would actually be projected by world events.

Other periods of foreign duty followed. He was in command of Fort McKinley in the Philippines from 1906 to 1908, then an observer in the Balkans and, after a short time in the Office of the Chief of Staff in Washington, he sailed again for the Philippines where he commanded the Department of Mindanao from 1909 to 1914.

Upon return to the United States, Pershing commanded the 8th Brigade until April 1914. He served on the Mexican Border until 15 March 1916, when he entered Mexico in command of the Punitive Expedition, remaining there until February 1917.

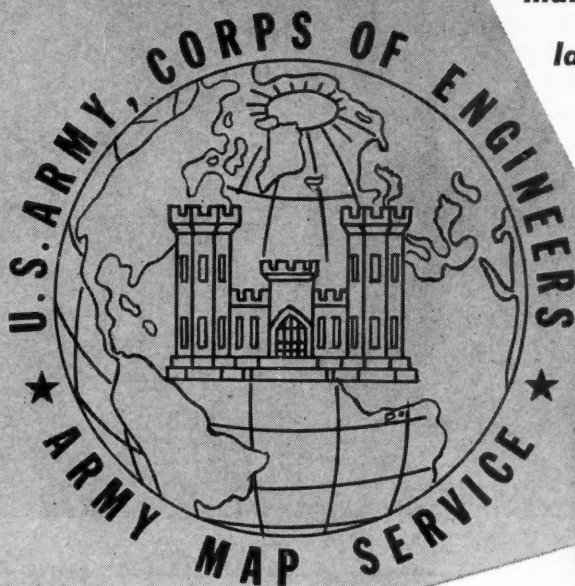
On 26 May 1917, then Major General John J. Pershing was designated by President Wilson to lead the American Forces in the World War. He sailed for France two days later. The ensuing months, during which he led the American Expeditionary Forces to victory, constituted the

crowning achievement of his years of training, discipline and trial.

Following the Armistice, Pershing was the recipient of many honors, both American and foreign, civilian and military. He received the Distinguished Service Medal, the tendered thanks of Congress, the Distinguished Service Cross and at least seventeen foreign military decorations. Many honorary university degrees were his, and he became a member of the French Institute on 27 June 1936.

Following World War I, Pershing served as Chief of Staff of the Army from 1 July 1921 until his retirement for age on 13 September 1924. During this period, he exerted great influence on Army policy and its future leaders. In 1923, he became Chairman of the American Battle Monuments Commission, and on several occasions was honorary presidential delegate to Latin American countries.

When World War II came, John J. Pershing, a leader in the "war to end wars," was to have the final satisfaction of seeing the Nation's security maintained by leaders who had been formed under his capable guidance.



*In tri-dimension and
multicolor, the world's
largest military
mapping agency
produces*



Col. Frederick O. Diercks

THE Army Map Service—a Corps of Engineers' activity which this year celebrates its semicentennial—has developed from small beginnings into the world's largest military mapping agency.

Just fifty years ago, in 1910, space was set aside in a warehouse of the

COLONEL FREDERICK O. DIERCKS, Corps of Engineers, is Commanding Officer, Army Map Service.

Army War College—now Fort Lesley J. McNair—in Washington, D. C., for a map reproduction unit and a lithographic school which were later consolidated to form the Central Map Reproduction Plant—precursor of the Army Map Service.

In anticipation of a map supply crisis during World War I, the Central Map Reproduction Plant was reorganized, expanded and sub-

Documents

OF DECISION

**for today's training and
tomorrow's breakthrough**

sequently redesignated the Engineer Reproduction Plant, better known by the mnemonic "ERP".

Unprecedented demand for maps at the outbreak of World War II taxed the facilities of the ERP. In 1942, it was moved into larger facilities at Brookmont, Maryland, in buildings especially designed for map production, and was redesignated the Army Map Service.

The service experienced tremendous growth during World War II. Indicative of this trend, in 1939 the ERP plant was manned by 4 officers and 100 civilians, some of whom are still with AMS. By 1946, the Army Map Service employed 3,500 persons in its Washington, D. C., base plant and nine field offices. Today its personnel strength is 3,800—including 80 officers, 250

enlisted men, and 3,470 civilian scientists, technicians, and craftsmen in the base plant, four field offices (Louisville, Kentucky; Providence, Rhode Island; Kansas City, Missouri; and San Antonio, Texas), and at projects located throughout the Free World.

In terms of physical facilities, the base plant has grown from one to four principal buildings and eight supplemental structures. Ground will be broken early next year for another—a five-story Cartographic Engineering Building.

Mapping Mission

ARMY Map Service has as its primary mission the production of maps of foreign areas. For areas of the United States, it is responsible for producing only the map cover-



The author examines a tri-dimensional map of the 50th State prepared by Army Map Service. Diamond Head appears in corner.

age of military posts, camps, and stations; training areas; and once-over coverage of the entire Nation at the military scale of 1:250,000.

It also is responsible for the

- Collection and evaluation of topographic maps and geodetic data; and maintenance and operation of the Department of Defense topographic and geodetic library;

- Compilation, publication, and distribution of military topographic maps and related materials required by the U. S. Armed Forces;

- Field survey, research and analysis, and computation of geodetic data required by the Department of Defense for production of maps and charts and for support of all weapons systems;

- Collection and evaluation of Engineer intelligence data and the production of Engineer intelligence studies required by the U. S. Armed Forces;

- Production of studies, annexes and briefing materials of Engineer and special weapons aspects of Army and joint-service strategic and

logistic plans; and

- Improvement of operational techniques and equipment and, as directed, the accomplishment of other specific research and development projects in the field of mapping and geodesy.

TO accomplish this mission, the Army Map Service is organized into staffs (Plans and Production, Technical Developments, Administrative and Advisory) and six departments (Geodesy, Technical Services, Cartography, Graphic Arts and Distribution, Engineer Intelligence, and Field Offices). It also relies in part upon other Federal mapping agencies and commercial cartographic and lithographic firms to accomplish major portions of the military mapping program under contract.

Cooperation with friendly foreign nations places the skilled technicians of much of the world at AMS disposal in accomplishing mutual mapping goals. The Service benefits from map exchange and

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cooperative mapping arrangements with 49 friendly nations.

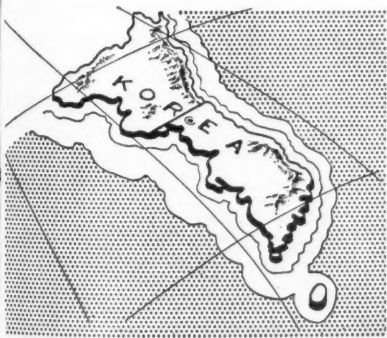
World War II was a time of great challenge to the Army Map Service. The increased mobility of the Army caused a greater dependence upon and demand for military maps. During that conflict, AMS printed two-thirds of the 500 million copies of maps used by the U. S. Army; in all, more than 30,000 different maps of all types were prepared and many others revised, covering 335,000 square miles of the earth's surface. Unquestionably, World War II brought the Service to maturity.

During the first four weeks of the Korean War, 10 million copies of maps—more than printed during all of World War I—were produced by the combined efforts of the Army Map Service and the 64th Engineer Base Topographic Battalion located in the Far East.

Future Needs

THE map demands of missile warfare will be even greater. Increased mobility, increased weapons range, and increased destruction-area potential are changing military map requirements. Maps

Korean War necessitated thousands of maps.



will have to be more accurate, with broader coverage, compiled and distributed to troops more rapidly than in the past.

To meet these demands, Army Map Service is using the most up-to-date methods and equipment. Nearly every phase of map production has been or is being revolutionized. Many classic methods have been discarded; conventional methods are being replaced by sophisticated methods making utmost use of advanced electronic principles and automation systems. The result is increased productivity and accuracy, and reduction in elapsed time between inception of a project and distribution of the finished military map.

Satellite Tracking

TRACKING of artificial earth satellites and observations of star occultations* are being used to collect data from which the size and shape of the earth may be more accurately determined. Considerable progress has been made in recent years. In surveying by occultation methods, the Army Map Service found one Pacific island to be about 4,600 feet from its charted position.

Army Map Service participation in the artificial earth satellite program began soon after announcement of plans to launch scientific satellites during the International Geophysical Year. Its participation

*A star occultation is the eclipse of a star by the moon as the moon's limb passes between the star and an observer on the earth. The precise times at which occultations of a particular star are observed from two widely separated positions on the earth are used in combination with known earth and moon motions, to compute the terrestrial distance between these positions.



Service experts chart terrain in the field.

consisted of two major activities—AMS support of Project Vanguard; and implementation of the Army Map Service-originated Project Betty. (See "Pioneering in IGY Research," March 1959 DIGEST.)

In support of Project Vanguard, the Army Map Service established six satellite-tracking stations as a part of the Prime Minitrack System. A line of stations, roughly following the 75th meridian, was set up at Blossom Point, Maryland; Fort Stewart, Georgia; Havana, Cuba; Quito, Ecuador; Ancon, Peru; Antofagasta and Santiago, Chile. Army Map Service, with the assistance of Signal Corps, operated the southernmost six of these stations. The northernmost, at Blossom Point, was the responsibility of the Naval Research Laboratory.

Vanguard track stations — now operated by the National Aeronautics and Space Administration—are so positioned that their vertical fan-shaped antenna patterns provide an invisible electronic fence running north and south through the Western Hemisphere through which the satellites must pass. Collected data permit determination and prediction of satellite orbits. Because of the effects of the earth's size, shape,

magnetic field, and gravity upon these orbits, these data also furnish valuable new information on the size and shape of the earth.

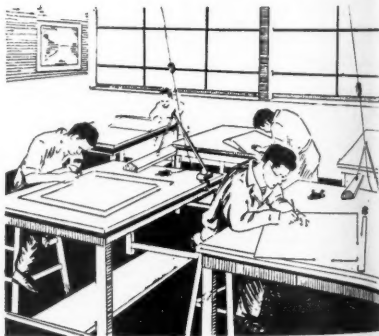
Whereas Project Vanguard determines the orbit of a satellite by tracking it from precisely located stations, Project Betty determines the geodetic location of the tracking station from observations of the known orbit already determined by the Vanguard system. Project Betty tracking stations are portable, and the system of which they are a part is called Minitrack Mark II. Through Project Betty, orbital data on the satellites have been used to improve the geodetic positions of certain islands in the Pacific.

The Service has reduced the satellite orbital data to obtain a new determination of the flattening of the earth at the poles. This is being used to calculate a best-fitting ellipsoid and a World Geodetic Datum upon which to base military grids, projections, and guided-missile control.

Electronic Aids

NEW electronic instruments have not only enabled field survey work to be accomplished more rapidly,

Attention to smallest detail is essential.



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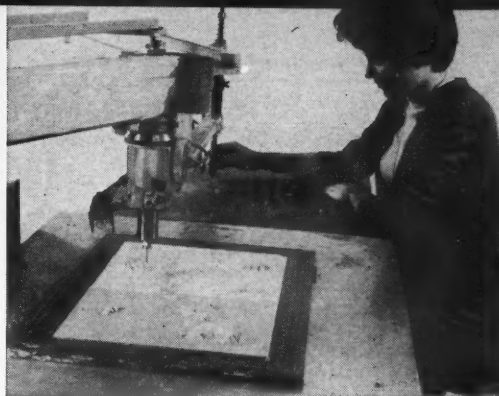
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In making relief map, a model is carved in step form, left. Contour lines are followed by a stylus on metal plate, right, to carve contour into plastic block.

and in some instances more accurately, but have made possible establishment of geodetic base lines through terrain which under former methods would not even allow base line measurement at all. The Geodimeter, an electro-optical distance-measuring instrument, and the Tellurometer, an electronic distance-measuring instrument, are now regularly used in normal survey work. The Cuptana-Calqueman base line in Chile, which has its terminal stations on two islands in the Archipelago do Los Chonos, could not have been measured by conventional means; the geodimeter team from Army Map Service had to travel by railroad, boat, and aircraft to accomplish the task.

Use of helicopters in surveying has considerably speeded up field operations, enabling establishment of triangulation stations that could not even be reached otherwise. The helicopter has also proved extremely advantageous for altimetry work, operating between bases having as much as 6,500 feet difference in their respective elevations. The Army Map Service's present Special Foreign Activity—the 329th Engineer Detachment (Geodetic Survey)

—is currently using helicopters in survey operations in Libya.

Computer Applications

ARMY Map Service is one of the oldest and most experienced government agencies in the electronic computing field, having acquired its Univac I in 1952. This high-speed computer has been worked around-the-clock, seven days a week during recent years in order to meet constantly increasing computing workload requirements. The Service has pioneered many electronic computing applications, especially in connection with the use of artificial earth satellites for geodesy and mapping, and in the utilization of digital methods in map production techniques.

Because Univac's capacity falls short of anticipated future needs, the Service has contracted for a new facility with approximately 15 times the capacity of Univac. Beginning in January 1961 when the change-over will become effective, the Service anticipates handling a workload approximately six times larger than the present one for less than twice the cost, and with spare capacity available for still further



Maps of far-off places served assault troops.

expansion. New advanced problems are already being programmed for the new computer.

A most significant contribution of electronic computers to the map-production field is in the adjustment of survey control through aerial triangulation. Photogrammetrists, utilizing first-order stereoscopic plotting instruments, measure and record the precise positions of points on aerial photographs. Mathematical adjustment of these points to their true ground positions—formerly a slow, tedious process—is accomplished rapidly on high-speed computers.

A new photogrammetric instrument for plotting topographic map compilations has been developed under specifications prepared by Army Map Service. The instrument, known as the AMS Model-2 Stereoplotter, fulfills the requirement for an American first-order-of-accuracy plotting instrument. Its accuracy is equal to that achieved by the most expensive and elaborate European plotting instruments.

Engraving on Plastic

THE familiar but time-consuming pen-and-ink drafting method of preparing color-separation draw-

ings is no longer used at the Army Map Service. It has been entirely replaced by the superior method of engraving on coated plastics. This new process—called “scribing”—has reduced the time required for color-separation drafting by 25 per cent.

As now produced, the copy is in negative form, ready for preparation of the printing-press plates. This eliminates most of the costly and time-consuming copy camera work.

In the past, the task of applying place names and marginal information to military topographic maps also was slow and tedious. AMS has combined the capabilities of the Fotosetter—a composing machine which sets the type photographically—and the Staphograph, a French-built machine which positions the film-imprinted place names on a manuscript of the map. Each name is then photographically exposed to a large piece of film in the Staphograph. This film, when developed, serves as the negative from which the press plate can be prepared.

Current studies are seeking to adapt this principle to automation whereby the position of the name would be recorded during compilation of the map and played back automatically; a servo-mechanism controlled by taped or otherwise recorded data would replace the manual positioning operation.

Plate Making and Printing

DURING recent years, Army Map Service has conducted several development projects to improve and simplify equipment, materials, and techniques involved in preparation of metal photolithographic press plates. Conventional items of

equipment were modified, or even eliminated. Plate coatings were improved and an entirely new method of platemaking evolved.

These efforts culminated in the adoption of the pretreated aluminum plate sensitized by a simple rub-on application that produces a quality image. It has the advantage of simplicity in processing, unlimited shelf life of the chemicals, and increased production.

Familiar items of engraving equipment, such as the grainer and whirler, are no longer seen at Army Map Service. Remarkable amounts of time are being saved in the preparatory phases of photolithographic printing.

Presses in the large, up-to-date AMS printing plant can print as many as five colors in one continuous operation.

Mapping the Moon

ARMY Map Service recently launched a project that is believed to be the first attempt to produce a topographic map of the moon by stereophotogrammetric methods. The current project seeks to compile a topographic map of the moon at the scale of 1:5,000,000 from

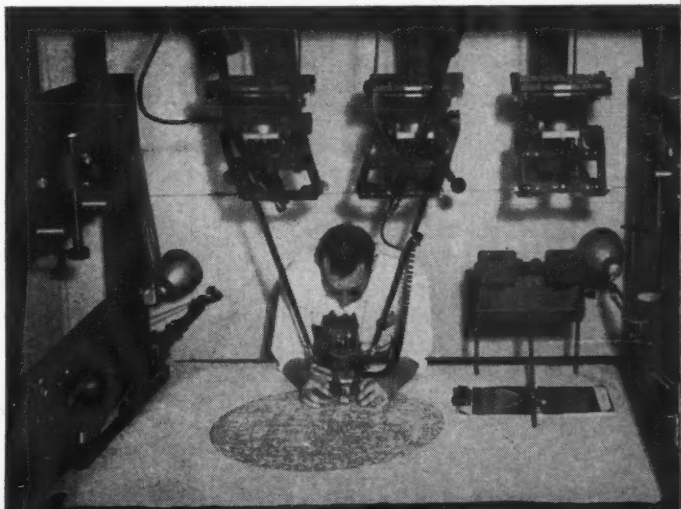
existing photography. Preliminary stages of this project include collection and evaluation of existing lunar photographic and mapping data; determination of a projection on which to plot the map detail; and determination of equipment and procedures to be used in the compilation process.

Many unique problems are being encountered, particularly because existing photography was taken to suit predetermined astronomic rather than photogrammetric purposes. Hundreds of photographs from the Lick, Yerkes, Mount Wilson, Mount Palomar, Pic du Midi in the Pyrenees, and U. S. Naval Observatories have been examined for stereoscopic effect and image resolution.

The current investigation represents Army Map Service's initial venture into the field of lunar mapping. It is believed that this is the first attempt to map the moon by modern stereoscopic principles which are now commonplace in mapping the earth's surface.

AMS anticipates mapping the moon at the scale of 1:1,000,000 as soon as mapping methods are finally determined and further ade-

A stereoplotter is used in preliminary work on gigantic lunar mapping project now under way.



quate photographic coverage is acquired. Mapping the visible 60 per cent of the moon at the military map scale of 1:250,000 may be possible with the advent of balloon-borne cameras carried essentially outside of the earth's atmosphere. Photography from moon satellites eventually should make possible production of 1:100,000-scale maps.

Many advantages in mapping the earth are anticipated in the use of specially designed earth satellites to provide geodetic data and photographic imagery of the area over which it passes.

Since it should be possible to collect raw mapping materials far more rapidly by this method, Army Map Service is striving to increase its speed of map production capacity without expanding its facilities and manpower.

Integrating the Mapping Process

AN Integrated Mapping System employing modern electronic data processing techniques is being developed by the Service. Under this system, the many complicated steps of conventional map production will be replaced by four basic ones:

- procuring aerial photography;
- scanning the photographs stereoscopically in photogrammetric plotting instruments;
- scribing the color-separation negatives; and
- printing the map on multi-color lithographic printing presses.

Not too long ago, it took several years to produce a typical topographic map. This time has now been reduced to about two years under normal circumstances. Under urgent conditions, a usable map can be produced from available source material in matter of weeks.

At the outbreak of the Korean War, the Army Map Service, using materials on hand, produced a new 1:250,000-scale map series of 22 sheets covering all of Korea within only eight weeks. In the not-too-distant future under the Integrated Mapping System, it is expected that the Service will be capable of producing maps in a few days, and even, it is hoped, in hours.

However, with the advent of improved and more rapid means of collecting raw topographic and geodetic data, AMS must continue to seek still faster methods of producing maps. New concepts of map production must be sought, for it is likely that future topographic data will be in the form of electronically stored data that cannot be visually examined but which will be used directly to produce the final map.

THE past half-century has been one of unprecedented rapid development in the fields of cartography and geodesy. The Army Map Service is proud to have taken an active part in this development, helping to advance the great Corps of Engineers tradition that began in 1777 with Robert Erskine, the first U. S. Army military surveyor, and marked by the illustrious careers of John C. Fremont, George G. Meade, John McClellan, Joseph E. Johnston, John Pope, and Robert E. Lee—men who, as officers in the Corps of Topographical Engineers, charted the trails beyond the frontiers across the then unknown continent.

Today the Army Map Service seeks to map the last unrecorded areas of the earth and is actively engrossed in topographically mapping the moon—the new frontier of our day.

Mauler—Air Defense Missile System

SHOWN HERE is an artist's concept of the Army's new Mauler air defense missile system, now under development. This highly mobile solid propellant weapon is designed to destroy short-range ballistic missiles and rockets, as well as high-performance tactical aircraft that bomb, strafe, harass or reconnoiter near forward positions.

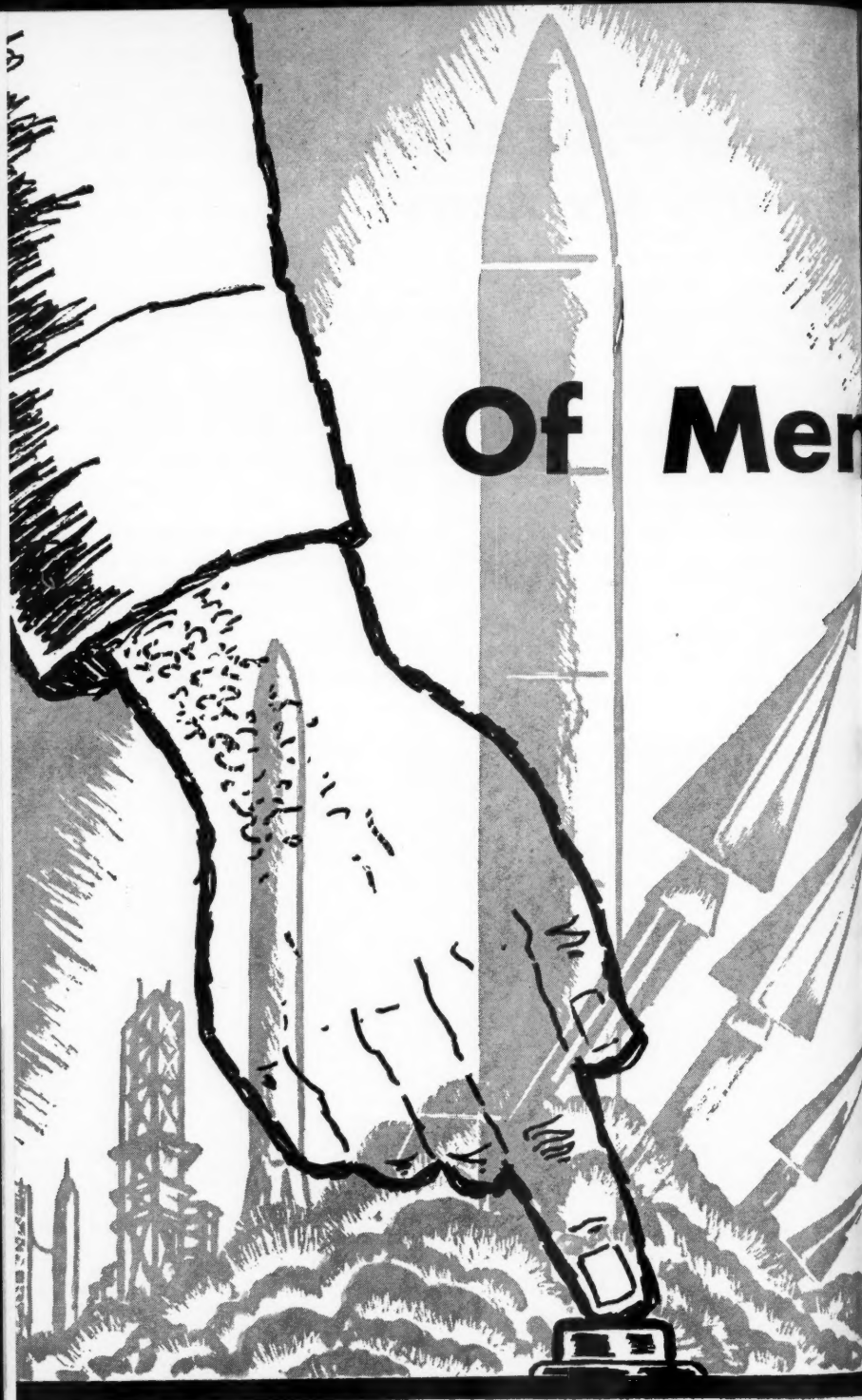
Capable of delivering accurate fire even while moving, the Mauler fire unit will be contained entirely on a self-propelled chassis of standard design. Light enough to be carried by fixed-wing aircraft or helicopter and dropped by parachute, the Mauler will contain a power supply, target detec-

tion and electronic computer fire control equipment as well as its own basic load of missiles.

The Mauler's surface-to-air missiles will be packed in lightweight containers which will serve both as shipping containers and as launching tubes. One man will be able to operate the fire unit.

The Army Rocket and Guided Missile Agency, an element of the Army Ordnance Missile Command, at Redstone Arsenal, Alabama, has overall charge of development. Convair Division of General Dynamics Corporation, Pomona, California, is the development contractor.





Of Men

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*Human judgment and complex electronics
must be smoothly meshed and attuned
to insure effective functioning*

and Missiles

Lieutenant Colonel Philip J. Corso

ELECTRONIC equipment lights up in the fire order sequence—sleek missiles rise to point their lethal noses to the sky—the count-down reaches zero—the fire button is pressed and with a roar the weapon soars aloft—electronic computers guide it to burst on a radio controlled drone miles away.

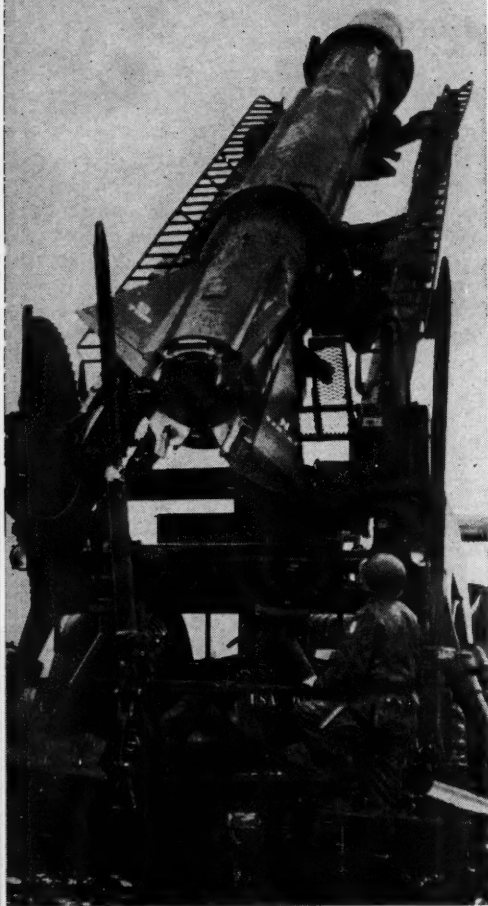
To visiting groups of high ranking officials at a Seventh U. S. Army missile battalion site in Germany—only minutes by jet from the nearest Russian airfield—the overall effect is impressive, reassuring. Frequently visitors leave with the im-

pression that, actually, pushbutton warfare is well along toward perfection. After all, they had just seen a pushbutton at work.

But to those who look below the surface, who probe a little more intensively to understand what has happened, it is apparent that a vast and complicated organization must be brought into being, equipped and trained in order to make that pushbutton work. And at the very basis of the entire organization stands the key to it all—the individual soldier.

The missile shooting into space is dramatic. It is news. But the small, insignificant, dusty but dedicated soldier who made it possible is neither dramatic nor news. Remove this soldier, however, and the missile will be just a cold piece of steel, wires and fuel which will quickly deteriorate to the point where it is useless.

LIEUTENANT COLONEL PHILIP J. CORSO, Artillery, now Inspector General of Seventh U. S. Army Support Command, commanded the 3d Missile Battalion, 71st Artillery from 1957 to 1959. The battalion, first such unit operational overseas as part of Seventh U. S. Army in Germany, also attained the first perfect "shoot" during annual service practice in New Mexico in August 1958.



"In a short space of five years, ordinary men have mastered the missile to the point where entire battalions . . . fire perfect scores."

ENTRY of the missile into the tactical military field opened a new era. Compared to the limited range of gun tube artillery (which of course still has extreme value) the defended area was vastly expanded.

This weapon is served and serviced by ordinary soldiers who have received specialized training. In a

short period of five years, these men have mastered the missile to the point where entire battalions, in their annual service practices, fire perfect scores against radio controlled drones.

On completion of their practice shoots at White Sands, New Mexico, the battery or battalion moves to its station in the United States or proceeds to its overseas site, such as Germany, where often the nearest Russian airfield is just minutes away by jet. A constant alert status, combined with operational checks, equipment breakdowns, and the never-ending cycle of repair and maintenance, tests the energy and fortitude of the best of soldiers.

The number of men to perform the myriad of duties is generally limited. A missile battalion (Nike) is composed of 38 officers, 13 warrant officers and 644 enlisted men. A typical battery is composed of 6 officers, 2 warrant officers and 133 enlisted men.

Mobility Magnifies the Task

MUCH has been written and discussed lately of doctrine that probably would govern future warfare—of small units with high rates of firepower, capable of concentrating rapidly to deliver heavy blows and then dispersing swiftly to avoid presenting good targets to the enemy. But consider what this mobility requirement entails, and the magnitude of the task confronting a missile battalion becomes apparent.

Merely to be able to move involves the use and maintenance of about 200 vehicles and a like number of trailers and other towed loads. Generators must be able to operate 24 hours a day to supply necessary electrical power. This re-

quires a continuing fuel supply and many hours of maintenance and supervision. Radios and electronic equipment must be maintained and manned around the clock.

A partial list of supporting equipment of a Nike-Ajax battalion includes—Engineer: 108 major items, including generators, fire trailers, camouflage nets. Chemical: 675 masks, 48 units of air breathing apparatus. Signal: 12 power units, 49 radios, 5 generators and 1 radio teletypewriter.

Besides missiles, Ordnance equipment includes 13 large radars, 17 large operations vans, 361 carbines, 37 machine guns, 36 rocket launchers, 74 submachine guns, 215 rifles, 34 electronic test sets, 107 tool sets,

200 vehicles, 137 trailers, 45 heaters, 160 launching rails and 36 launcher loaders.

In addition to all of this, there are hundreds of other items such as telephones, wire reels, flashlights, gasoline cans, pumps, tents, batteries, fuel servicers, shovels, axes, picks, stoves, air conditioners, messing equipment and much else to be transported and maintained.

Men Behind the Missiles

MEN of the battalion spend thousands of hours maintaining all of this equipment to keep the unit combat ready. Maintenance on trucks, trailers and generators is considered common; the main or specialized effort is on the support-

A Corporal missile is checked and ready to begin the move toward launching pad. Soldiers accompany missile to assure that nothing hampers short trip.



Of Men and Missiles

ing equipment of the basic weapon—the missile.

Actual figures taken from the performance of the 3d Missile Battalion, 71st Artillery Regiment, showed that during the first year on site, the total number of battery non-operational hours was virtually nil. A tremendous effort must be expended to maintain this high state of combat readiness. The unit's outstanding record was made possible by more than professional proficiency; a sense of responsibility and dedication is also involved. It becomes all the more amazing when one considers that so many of the soldiers were young draftees, that the bulk of them had never seen a missile before joining the unit, that the supporting electronic equipment was a complete mystery, and that there was a turnover of more than half of the battalion members.

In one typical battalion, the men measure up to the following standards: Mental rating, 88 percent are

of average intelligence or above. Education, 80 percent have had at least high school training. Age, 75 percent are under 25, 40 percent are under 22. Marital status, 75 percent are single. Category, 60 percent are Regular Army.

The records compiled by such young men—soldiers who are typical American youths, not specially picked for background or ability—belie the pessimistic thinking of some concerning the worth of our manhood today and the institutions of American life. Certainly our men, institutions, and system of training are all basically sound when, in the short space of a few months, these soldiers can master the complex machinery and equipment that make up a missile unit.

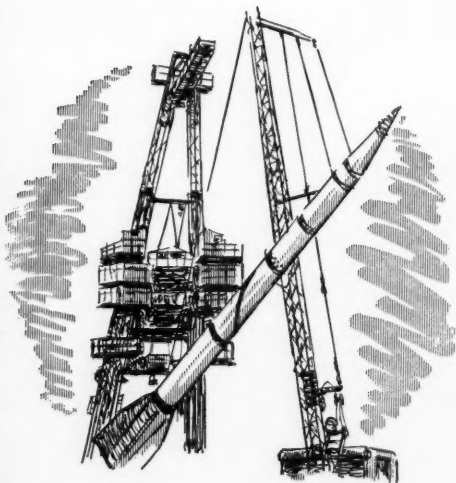
At the same time it must be remembered that weapons are only as good as the personnel who man them—and to pile more complex equipment upon individuals without recognition of this factor may lead to breakdowns. Therefore a consideration of the human factor becomes of increasing importance in all phases of determining the feasibility of a weapon.

Throughout the design and test phases, human factors engineering today is being performed concurrently with weapons system component engineering.

When finally developed, any new weapon must be within the using capability of ordinary soldiers of average intelligence. Maintenance, handling and construction must be relatively simple. Complex, ponderous equipment on fixed bases should be shunned. Equipment must be kept light, mobile and rugged.

The missile or rocket especially

Placing missile in position requires care.



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U. S. forces in Italy
forming link in NATO
chain of defense set up
a Corporal missile dur-
ing field exercise.

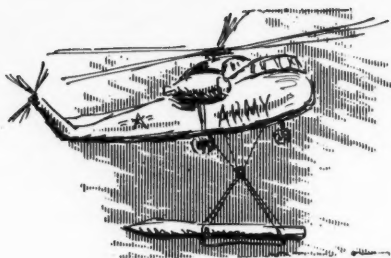


should be built around the individ-
ual soldier, with maintenance, train-
ing, durability, mobility all being
considered, developed and per-
fected beginning with the drawing
board. Obviously, planners are faced

with a choice between essential per-
formance and other characteristics
as competing requirements. In
such cases the performance charac-
teristic properly must be estab-
lished in a position of first priority.

Deep in a hidden site near Grafenwohr, Germany, men of 3d Missile Battalion,
formerly commanded by the author, set up and fire an Honest John rocket.





Air-mobility of missiles is an essential.

Human Factors

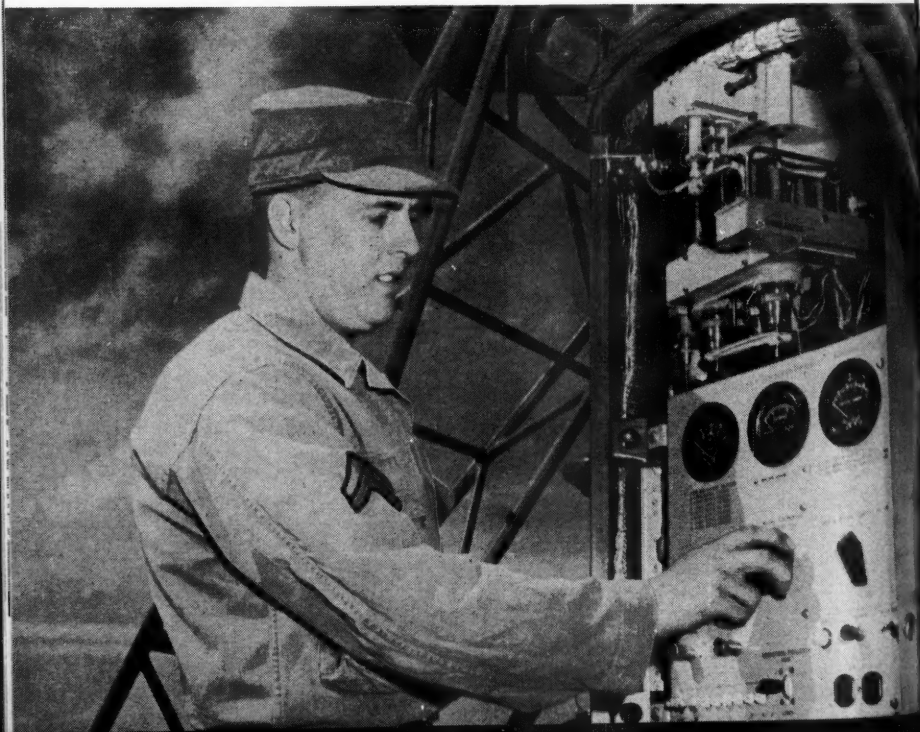
WHAT are the traits of the ordinary American soldier that should be considered? He is a good soldier—mechanically inclined—able to absorb knowledge quickly and easily—accustomed to working with his hands—versatile and intelligent. He can be easily motivated if things are properly explained.

Missile men must spend thousands of hours maintaining equipment which includes not only weapons and means to move them but also complicated electronic devices.

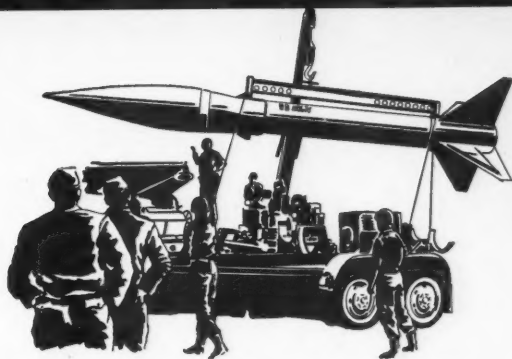
He loves his country. He is religiously inclined. He wants to do a good job and he wants proper leadership to help him do it. He does not like to be pushed.

Based on all of this, the weapon must be good since the American soldier understands quickly if claims of its capability are wild, out of proportion, or fantastic. Otherwise the men lose interest and do a job bordering only on minimum standards. If the men have confidence and faith in their weapons, however, morale, discipline and combat effectiveness will naturally follow.

The relationship of the soldier to the weapon is, then, of prime importance. Practical experience has taught some simple rules which all researchers should keep in mind in the initial development stages of



"This weapon is served and serviced by ordinary soldiers."



any weapon. This might be expressed in the table below.

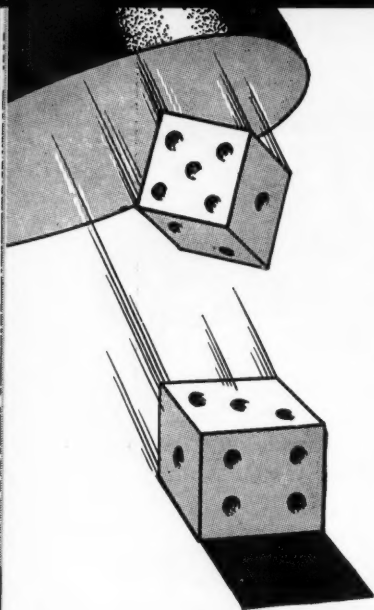
If weapons meet these standards, we have nothing to fear of the

enemy, since the most valuable and reliable weapon still remains the capability, attitude and performance of the individual soldier.

THE SOLDIER

THE WEAPON

<i>In order to:</i>	<i>Must be:</i>
Understand	Simple
Survive	Mobile
Maintain Easily	Practical
Perform Under Field Conditions	Rugged
Use When Needed	Reliable
Have Faith in Weapon	Able to Perform its Designed Mission
Be Motivated	The Best that Can Be Produced at the Time
Become Professionally Proficient	Easily Adapted to Training Programs
Not Lose Interest	Not Propagandized
Become Combat Efficient	Integrated with Supporting Equipment
Become Combat Effective	Adapted to Individual Soldier During Research and Development Phase



**The Uniformed Services Contingency
Option Act calls for keen analysis
of your individual situation, so**

Consider the Odds

**Major Casper Berger and
Professor James J. Chastain**

MEASURING the odds is important in individual financial affairs just as it is in poker, business, or war. Yet many excellent poker players, outstanding businessmen, and military experts who carefully consider the odds in other areas fail to think in terms of probabilities in their personal financial affairs. One example is the attitude of a great majority of service personnel regarding widowhood for wives of service retirees.

The person in the service who has not had the *possibility* of his wife's becoming a widow pictured vividly to him by a life insurance agent has probably been on an Antarctic expedition all his military career. But what of the *prob-*

ability? What are the chances that a service retiree will outlive his wife? If his wife does become a widow, how long will she be likely to live? These probability questions are important in personal financial planning. But answers to them are not always available, and where they are available they are frequently misunderstood.

It is common knowledge that men have a life expectancy of about seventy years and that women can expect to live about five years longer. Based on these facts it seems reasonable to think that the odds are that a wife who is about the same age as her husband will be a widow for about five years. But this is not the case, for life expectancy statistics are deceptive.

Actually, life expectancy is not a fixed figure, for there is more truth than is immediately apparent in the simple statement that the longer a person lives, the older he is

MAJOR CASPER BERGER, *Transportation Corps*, prepared this study in collaboration with **PROFESSOR JAMES J. CHASTAIN** of the University of Omaha Insurance Department, while working toward his baccalaureate degree under the Final Semester Plan.

likely to be when he dies. A person who has a life expectancy at birth of seventy years has an expectancy of forty-three years if he reaches age thirty, of seventeen years if he reaches age sixty, and of three years if he reaches age ninety.

If a person retires from the service when he is 47; if his wife is the same age; and if both are in average physical condition, the probability is that she will outlive him by about five years. Service personnel frequently place great emphasis on this five-year figure. It does not seem like a long time; hence the problem of providing income in case the wife becomes a widow does not appear to be a serious financial one. But the five year average figure is misleading. It conceals the fact that thirty to fifty percent of wives do not outlive their husbands but that those who do are likely to live for much longer than five years. The fifty to seventy percent of wives who do become widows are likely to live for ten to fifteen years longer.

Charting the Probabilities

THE accompanying table showing probability of widowhood and length of widowhood for non-disability service retiree wives was computed by Mr. Robert J. Myers, Chief Actuary of the Social Security Administration, as one of the three members of the Board of Actuaries for the Uniformed Services Contingency Option Act. The non-disability retiree who retires at age 47 and whose wife is the same age can expect to have his wife outlive him in six cases out of ten. For those wives who become widows, some will die a year or two after their husbands and some will live

to be ninety but the average length of widowhood will be 13.8 years!

Basic Principles

GOOD risk managers in poker, business, war, and family finances try to follow these three important rules:

1. Always play with the odds.
2. Don't risk much for a little.
3. Don't risk more than you can afford to lose.

Service retirees who do not make provision for a relatively long widowhood for their wives are playing against the odds. At best, odds are even but if the wife is the same age as, or younger than, the husband the odds are less than even.

Although 50-50 odds are common in determining who will pay for coffee, and would be considered excellent in Las Vegas, most service personnel prefer not to allow the financial futures of their wives to ride at such odds. The retiree is also risking much—the financial dignity of his widow—for a relatively small amount of additional present income. Most are also risking more than their widows can afford to lose. The odds are bad and the stakes are high.

Alternative Solutions

IT IS not surprising that, in discussing this financial problem, the life insurance agent usually presents commercial life insurance as the best solution for it actually is the only solution in some situations. Two alternative solutions, however, are frequently not given enough careful consideration by prospective retirees.

One of these solutions, unfortunately available to very few retirees, is money. It has been said

Age of non-disability retiree at retirement	Wife five years younger than husband		Probab that w will ou live he husban
	Probability that wife will out- live her husband	Average years of widowhood	
42	.71	16.2	.60
47	.71	15.8	.60
52	.71	15.2	.60
57	.71	14.3	.60

that nothing offers as much security as a million dollars. Even \$100,000 carefully invested or in trust offers security. Money has the added advantage of minimizing all other family financial risks as well as that of widowhood for the wife. But, as we have already indicated, this is not a solution available to the prospective retiree who has lived half his life without saving or inheriting the necessary money.

In 1953, however, Congress recognized the serious financial problems arising out of the death of service retirees. If the person died the day before retirement his widow was eligible for a lifetime income as Dependency and Indemnity Compensation (DIC). If he died after retirement of a non-service-connected disability there was nothing to take the place of DIC. In order to partially solve the

problem, the Uniformed Services Contingency Option Act (USCOA) was enacted, to provide a second alternative solution available to all members of the Armed Forces. (See "The Choice is Yours," May 1959 DIGEST.)

The intention of Congress was to provide "actuarial equivalents," that is, to provide a plan that would take in about as much money from living retired persons as it paid out to widows and dependent children. This goal has been substantially achieved during the first four years of operation of the program.

The advantages of the program are that the individual can now equitably redistribute his retired pay so as to give protection to his survivors, with the administrative costs of the program being borne by the Government. By using

	Wife same age as husband		Wife five years older than husband	
	Probability that wife will out-live her husband	Average years of widowhood	Probability that wife will out-live her husband	Average years of widowhood
16.2	.60	14.2	.48	12.6
15.8	.60	13.8	.48	12.1
15.2	.60	13.1	.48	11.3
14.3	.60	12.1	.47	10.2

USCOA, he participates in a program specifically tailored to fit his need and saves certain selling expenses, taxes, and other administrative expenses that would be required if he attempted to do the same thing through a private insurance company.

USCOA, simply stated, permits a member of the Armed Forces to elect to receive a reduced amount of pay at time of retirement, in order that designated surviving members of his immediate family may be entitled to an annuity in the event of his death after retirement.

Members of the Armed Forces who were already in a retired status when USCOA became available in 1953, and those members who already had over eighteen years of service for pay purposes, were initially afforded an opportunity to participate in the program. There-

after, the law requires all members of the Armed Forces, whether on active duty or in a reserve status, to make a decision regarding their participation in the program before the completion of eighteen years of service for pay purposes.

Options Offered

THE Uniformed Services Contingency Option Act provides four basic options for those who elect to participate:

OPTION 1. This provides a monthly payment to the retiree's widow until her death or remarriage. Under this option, the widow must have been the lawful wife of the retired member at the date of retirement.

OPTION 2. This enables the retiree to include his eligible dependent children, including step-children and adopted children, under

Consider the Odds

the annuity program. Monthly payments are made in equal shares to or for the children until they reach age 18 or marry. The annuity is continued after age 18 for mentally or physically handicapped children as long as they remain incapacitated and are unmarried, and providing the handicap existed before the child's eighteenth birthday.

OPTION 3. This provides an annuity for the member's widow until her death or remarriage under the same conditions stated under Option 1. However, subsequent to the death or remarriage of the retiree's widow, this Option permits the continuation of payments to eligible dependent children for so long as there remain any such children surviving who meet the requirements stated under Option 2.

OPTION 4. This is a provision that no further deductions shall be made from the retired pay of the retiree, when there is no longer an eligible beneficiary. This option is used only in conjunction with the first three options providing the Armed Forces member elects to include it in his individual USCOA program.

Payments to the dependent survivors of the retiree under Options 1, 2, and 3 may be one-half, one-quarter, or one-eighth of the retiree's reduced retired pay. Members of the Armed Forces may elect Option 1, 2, or 3 (with or without Option 4), or may choose both Options 1 and 2 (with or without Option 4) as a combination. Option 1 or 2, however, cannot be combined with Option 3.

Benefits Involved

THE 47-year-old non-disability retiree previously described could

choose Options 1 and 4 with half of his retirement pay to his widow by having his retired pay reduced by 10 percent. In effect the retiree and his wife are sacrificing 10 percent of their retirement pay for an average of 27 years (his life expectancy) in order to have the widow receive 42 percent for an average of an additional 13 years. Of if the one-eighth option is chosen, a retirement pay reduction of less than 3 percent would assure the widow of a life income of more than 12 percent.

It is a matter of simple multiplication to see that in choosing one of these options, the retiree is playing *with* the odds rather than *against* them. He is risking a little reduced present income for the possibility of much income to his widow. A retired pay reduction of 3 percent to 10 percent is not more than he can afford to lose. Thus he is satisfying all the principles of good risk management in electing a USCOA option.

The retiree who wishes to compare USCOA with commercial life insurance should compare rates for commercial survivorship annuities which are like Options 1 and 4 of USCOA except for the remarriage clause. For most ages the survivorship annuity costs at least 50 percent more than USCOA.

The disability retiree pays more for USCOA but the experience to date indicates that, even so, he is getting an "actuarial bargain."

Whatever the decision with regard to USCOA, the retiree will be more sure of himself if he has studied the probabilities. For only by considering the odds can the wisest decisions with regard to individual financial affairs be made.

Army Scientists Develop Pure Fluid Amplifiers

ARMY scientists at the Diamond Ordnance Fuze Laboratories in Washington, D. C. have developed greatly simplified control devices capable of partially replacing electronics in industry and defense. Described as a breakthrough comparable in importance to the vacuum tube and the transistor, the devices could launch a new industry and improve many weapons including missiles. Potential civilian applications include washing machines, windshield wipers and heating systems.

Consisting simply of a block of metal or heavy plastic in which passageways have been made, the devices are unimpressive in appearance. However, when gas or liquid is driven through they can perform the same functions as many complicated electronic circuits. A distinguishing feature is that they have no moving parts, in contrast to fluid amplifiers now in use.

The basic idea involves precise deflection of a high-power stream of gas or fluid by low-power streams from the side. Through a feed-back arrangement, the high-power stream can respond to stimuli

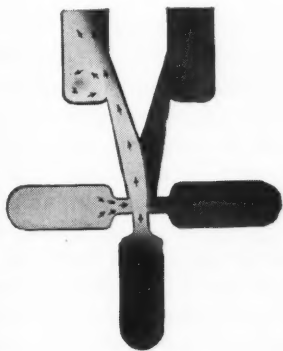
by changing its direction, oscillating or performing a "flip-flop." This characteristic gives the device potentiality for use in missile control systems and computers. In the latter, control mechanisms are linked to give a complicated series of responses.

Advantages of the amplifiers include:

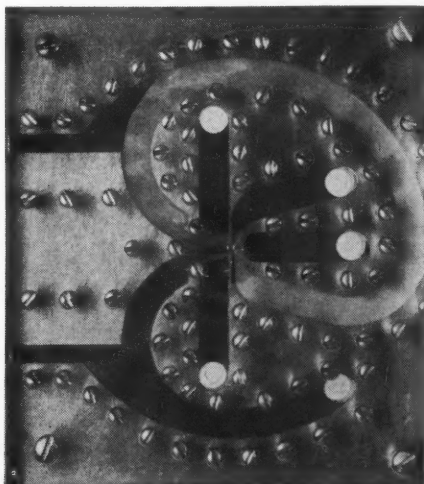
- Since they have no moving parts to wear out, they require no maintenance and no repairs.
- In comparison with other types of control devices, they are extremely cheap, rugged and reliable.
- They can be operated at white heat and also at extremely low temperatures and are not affected by radiation.

The amplifiers are not expected to replace electronics components altogether, since they cannot compete with the electronic system for very high-speed work.

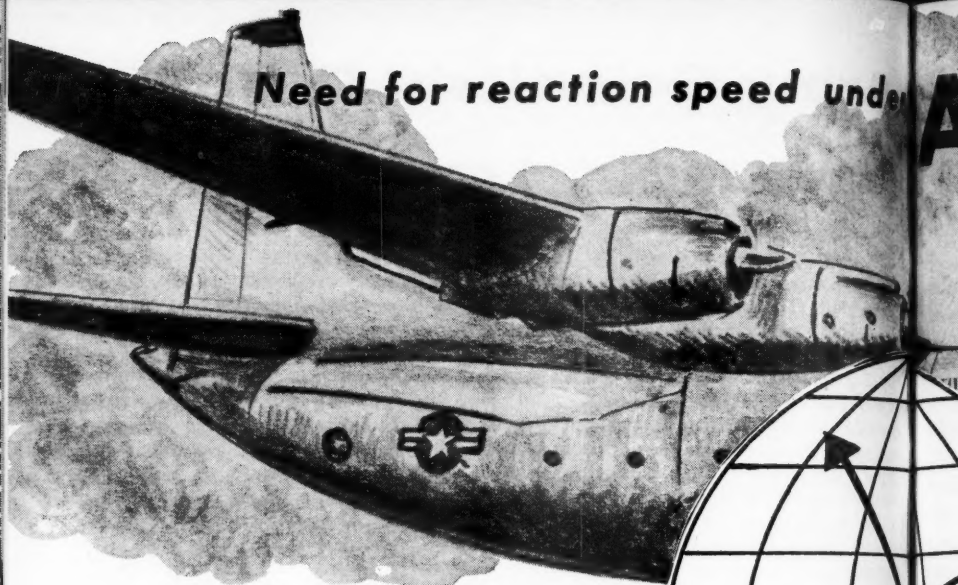
Inventors of the devices are three civilian scientists employed at the Diamond Ordnance Fuze Laboratories: R. E. Bowles of Washington, B. M. Horton of Kensington, Md., and R. W. Warren of McLean, Va.



When gas or liquid flows through simplified control device, it can perform same functions as complex electronic circuits.



Need for reaction speed under



General Lyman L. Lemnitzer
Chief of Staff, United States Army

SIMPLY STATED, the United States Army—and indeed all the Services—have important airlift requirements mainly because of the current widespread threat of international Communism.

Today the security of the United States is bound up defensively with the security of our allies the world over. In this circumstance, the United States has become the keystone of an interlocked Free World security system involving more than forty countries, reaching to the farthest corners of the globe, wherever United States national in-

terests are concerned.

In some cases we have deployed our own forces in direct support of these treaty arrangements. In other cases, we have given aid to Allied forces only through our military assistance programs. In all cases, however, the United States policy of mutual security is based on the concept that no single ally can be expected to have all the means necessary to meet every aggression that might be made against it.

It is not possible for the United States to deploy forces to all potential danger spots throughout the

Extracted from the Chief of Staff's statement before the Special Subcommittee on Airlift Requirements, Committee on Armed Services, House of Representatives, March, 1960.

Army Airlift



Requirements

THE effectiveness of military power as an instrument of United States national policy depends greatly on the ability to project this power promptly to any area in the world where it may be needed. With the rapid advances of modern technology, the movement of military forces has taken on a new meaning in terms of speed and distances. No longer can we rely on our Allies to hold off the enemy while we mobilize our forces and move them into the battle area solely by surface transportation. The events that take place within the first few days of an attack may well influence the outcome of a war, its duration, and whether it remains a limited conflict or expands into a general or world war.

world. For this reason, we must maintain forces in a central reserve here in the United States, ready for and capable of prompt and effective response and resistance to Communist attack. Such deployments may be required to reinforce United States forces already deployed overseas, or to enter areas where there are no United States forces presently deployed, in order to come to the aid of an ally under attack. The requirement could involve counteraction varying from a simple show of force to very sizable military operations.

Army Airlift Requirements

In a limited war, for example, the enemy may well have the objective of gaining control over a comparatively small land area and the people who inhabit it. If this can be done quickly, before United States forces can arrive, the objective of the aggression will be achieved before any decisive United States counteraction can be taken. Failure to stem immediately the enemy advance could well lead to a long and costly war. Such a war might not only fail to resolve the basic issues at stake, but could also lead to an expansion of the conflict into a general war.

Airlift—An All-Service Need

THERE is a tendency to consider that only the Army requires airlift. The fact is that all our Services need it. It is important also to realize that the same emergency which requires the prompt movement of Army forces by air also simultaneously requires the movement of elements of the Tactical Air Forces that are required to support them in the battle area. In addition, the emergency might be serious enough to demand simultaneous preparation for the possibility of a general war. In such a case, there would also be simultaneous, heavy demands for airlift to position properly the Strategic Air Command and other United States forces.

There is also the tendency to regard the requirements of airlift solely from the viewpoint of transporting men, equipment and supplies to the objective area. Since the object of the operation is to reinforce our own forces or those of our Allies, and to defeat the enemy, a most important considera-

tion is that combat with an enemy is also involved. Because the Army would play a primary role in this combat, it is vitally important that the delivery of the Army forces into the objective area is:

- In the right sequence—which means that the right troops with the proper equipment are landed in the proper order in the objective area.

- At the proper rate—which means that our forces are delivered in the objective area at a sufficiently high rate to insure that we are not defeated in detail, or are not required to suffer unduly heavy losses because of lack of strength.

For these reasons, the Army—and *only* the Army—can determine the optimum order and rate of delivering troops, equipment, and supplies in the objective area.

Airlift Objectives

THE Army believes that a solution to its airlift problem must enable it to cope with the wide variety of situations which call for rapid movement of troops and supplies to distant regions. Specifically, United States forces should be capable of performing the following tasks:

- Responding to aggression with the prompt movement of enough fighting forces, equipment, and supplies to prevent a *fait accompli* through enemy seizure of the objective area and its people before our forces arrive to assist them.

- Building up these forces, equipment, and supplies quickly enough to defend the area against enemy attack, and to defeat such an attack.

- Moving enough reinforce-

"The events that take place within the first few days of an attack may well influence the outcome of a war."



ments—men, weapons, equipment, and supplies—into the area to make it possible to continue combat for as long as is necessary to defeat the aggression and restore peace to the area.

Determining Needs

TO PROVIDE a basis for determining the amounts and types of augmentation forces that may be needed in various emergency situations, the commanders of Unified and Specified Commands prepare contingency plans which are submitted to the Joint Chiefs of Staff for approval. The Army forces involved in the various plans vary in magnitude from a force of company size to the Strategic Army Corps (STRAC)—a balanced force of three divisions.

The Army maintains the STRAC as an alert force which is ready to meet the requirements of these plans. If necessary to execute emergency tasks, it can begin initiation of air movement within an hour. STRAC is stationed within the Continental United States. Its

utilization is dependent, therefore, on long-range transportation provided by the Air Force and the Navy.

Any discussion of the aircraft required to move the airlifted portions of Army forces to meet emergency situations must recognize clearly that these requirements are governed by a number of independent variables. For example, each of the following factors has a direct relationship to the number of aircraft which would be required:

- Size of the force and its tonnage to be lifted.
- Distance to the objective area.
- Speed with which the force must be moved.

If our forces are moving to an area where organizational equipment is pre-stocked, or where logistic support facilities are already available, as in Europe or Korea, the amount of airlift required is greatly reduced from what would otherwise be required. It is for this reason that the Army has consistently advocated the establishment



"Forces moved by air . . . should be well-balanced and equipped to perform their mission upon arrival in the objective area."

of forward pre-stocked bases in areas of possible conflicts.

In addition, there are many technical factors to be considered in meeting the requirement for aircraft sorties. The existence of X number of aircraft in the inventory does not necessarily mean that, during any given period of time, *all* of these aircraft will be operationally available—that is, in commission or spotted reasonably near the loading center—so that X number of sorties can be flown in support of the stated requirement.

Besides the competing requirements, there are many operational factors to be considered, such as

the availability of crews and en-route facilities, the aircraft utilization rate, along with other factors, such as assembly of tactical airlift aircraft and resupply operations.

Time Factors

TO MEET its strategic airlift requirements for highly possible emergency situations, the Army believes it should have sufficient air transportation to:

Within hours of the time that the order has been given to move, fly at least two reinforced battle groups and their combat equipment to any trouble spot in the world.

Within a matter of days, move by air enough troops and supplies to build up to a full division force with necessary logistical support in the combat area.

Within two to four weeks, increase the size of the fighting force to two divisions with adequate supplies and supporting forces to conduct operations against the aggressor for an extended period of time.

Continue reinforcement if and as required.

FORCES moved by air in such situations should be well-balanced and equipped to perform their mission upon arrival in the objective area. Loading tables have been reviewed, looking to the reduction of airlift requirements to the absolute minimum. In this review, the Army has carefully considered each piece of equipment to insure that it is essential in the operation and must be moved by air. If not, it could come along later by surface transportation.

The Army considers the above requirement for the lift of two di-

visions to be a necessary, reasonable, and attainable goal. Furthermore, it should be able to depend on the certain availability of this lift whenever required.

Preplanning and Predesignation

TO REDUCE reaction time and increase responsiveness to aggression, the Army believes that preplanning for the use of a certain amount of airlift for possible limited war requirements is necessary. Such preplanning involves "pre-allocation," or "predesignation," of airlift. By this, the Army does not mean that a specific number of aircraft will be labeled "for Army use only." Actually, what is meant is that the responsible commanders, both Army and Air Force, will know specifically what Army forces are to be lifted, and the number and types of aircraft to be provided at the appropriate airfields.

Experience has proved beyond any doubt that necessary detailed preplanning can be accomplished satisfactorily only if based on such prior knowledge. The actual operation would not, of course, be initiated until ordered by proper authority, and the aircraft involved would otherwise continue to be available for other purposes, including training exercises.

The next step to attain an evident, flexible, and an obviously ready response to the Army's airlift requirements is the conduct of additional joint Army-Air Force mobility exercises. Besides providing a test of plans, these will demonstrate to any possible enemy our ability and willingness to respond to any attack. The refinement of plans upon such experience provides the basis for determining



"The Army has carefully considered each piece of equipment to insure that it is essential in the operation and must be moved by air."

the most effective fighting force for deployment within the shortest possible period of time.

MEMBERS of the Army and Air Force staffs have been reviewing the Army's airlift requirements in order to eliminate the remaining problem areas and to make both Army and Air Force units more responsive to urgent movements on short notice. Substantial agreement has been reached.

Ideally, the Army would like to see new types of aircraft developed and procured which are better tailored to meet its needs than the types now available. However, the

Army Airlift Requirements

Army feels it cannot afford the delay which this would involve. Consequently, as an immediate measure, the Army advocates the expedited procurement of additional aircraft from among those types now available. This is an immediate measure and does not reflect any diminution of Army interest in improved versions of transport and cargo aircraft.

Essential Goals

SUMMING UP the Army's requirements for airlift:

First, our national policy commits the United States to assist in the common defense of more than forty allied nations world-wide.

Second, the United States through its armed forces is meeting its treaty obligations by positioning forces overseas and by providing for their immediate reinforcement. The Army provides a mobile reserve which can move to areas overseas where the United States has no forces stationed.

It is essential that the Nation's armed forces react quickly to assist our allies in countering aggression. If we lack this capability, an at-

tacking enemy may be able to seize his objective before we can react. Additionally, slowness in response on our part may permit the enlargement of a localized war into a war of serious dimension. General war, also, would generate heavy requirements for the rapid movement of Army forces to distant critical areas which should be defended.

Unlike the other armed services, the Army has no organic means of providing for its own strategic mobility. Lacking such means, it cannot move with the rapidity which existing requirements demand.

The Army considers the requirement for the lift of a two-division force anywhere in the world, within a period of four weeks, to be a necessary, reasonable, and attainable goal.

The Army stresses that its forces may be air-delivered into an objective area in the midst of a combat situation. Since the Army would play a primary role in this combat, it is essential that it determine the optimum order and rate of delivering troops and material into this objective area.

Editor's Note:

IN RECOGNITION of the requirements for tactical and strategic airlift, the Senate and House of Representatives (86th Congress—Second Session) appropriated \$200 million for the interim modernization of the strategic air fleet. In addition both houses of Congress approved the following items which had been included in the original FY 1961 Defense Budget:

\$50 million for the development of a new strategic cargo transport.
\$70.4 million for the procurement of 25 C-130B tactical aircraft.

WITH THE 3 percent reduction applied by Congress to this and similar appropriations, a total of \$310.8 million was approved and a separate account established in the Air Force portion of the Budget for airlift modernization.

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IN THE largest airlift exercise ever held in peacetime, the U. S. Continental Army Command and the Military Air Transport Service joined in Exercise Puerto Pine/Big Slam in March 1960 to test capabilities for air movement of a large Army force by strategic airlift from United States to Puerto Rico and return.

The two-week exercise tested the mobility of Strategic Army Corps (STRAC) elements who were joined by mobilization-ready troops of the Utah Army National Guard and Pennsylvania U. S. Army Reserve. Emphasis was placed on moving large numbers of personnel with limited supporting equipment. Valuable training was received in planning, flying, loading and off-loading for a tactical operation in an intermediate staging area.

During Big Slam, 447 strategic aircraft moved some 21,000 troops and 11,000 tons of cargo to an overseas

marshalling area and return. Troops from 78 STRAC units at 29 home stations, outloading from 14 departure airfields, participated.

Experience Gained

AMONG the significant lessons learned:

- If MATS strategic airlift of Army elements is to receive increasing emphasis, detailed and continuing planning is essential.

- A test annex should become a part of all MATS and USCONARC war plans for execution on minimum-notice basis.

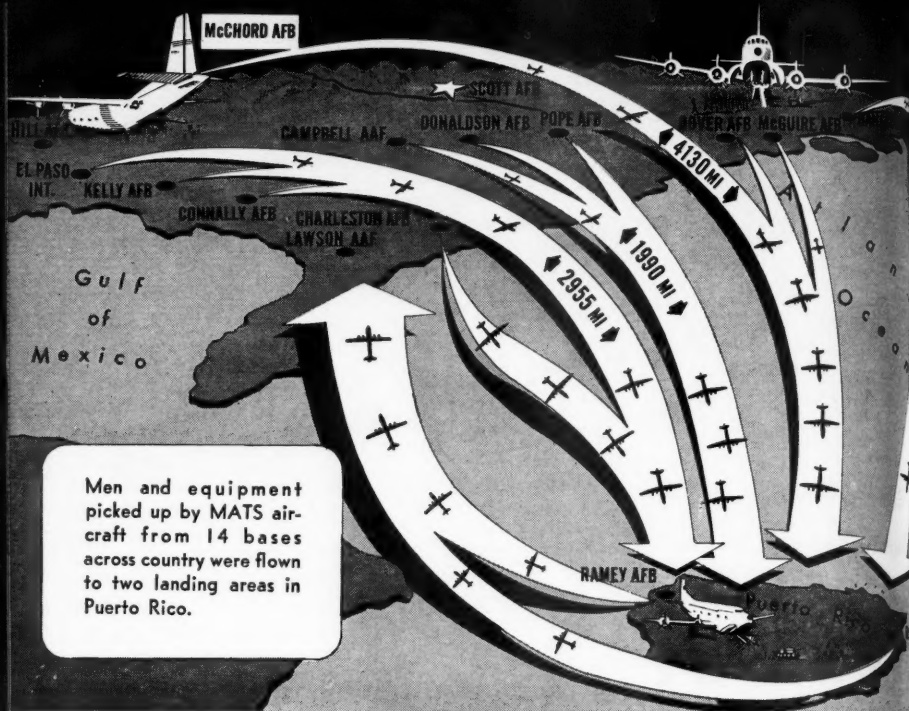
- Additional training and planning by MATS with the Army are needed to insure full utilization of available airlift capability.

- There is a requirement for MATS to develop within its material resources a greater ability to respond to any emergency airlift requirement.

**Puerto Pine/Big Slam
furnishes a**

Test of Airlift Capabilities





- Local air base communications or support facilities should not be relied upon by Army staging elements. The Army should establish its own mobile communication facilities.

- Army units trained in accordance with current doctrine can move and assemble for deployment at a location

different than their own stations and can become integrated with a larger force without delay or difficulty.

- Army units can be readily deployed to any temperate or tropical part of the world without extensive environmental training of a special nature.



Army Secretary Brucker discusses the Airborne troop landing in Puerto Rico with PFC Norman Pelky, who participated.

Conclusions Reached

WHILE analysis and study of the Puerto Pine/Big Slam exercise will continue for many months, certain conclusions and evaluations of accomplishments are already established.

Among the conclusions jointly agreed by MATS and USCONARC:

MATS can deploy STRAC, but present aircraft pose limitations. MATS strategic airlift forces and USCONARC-STRAC Forces, working directly together, are capable of large-scale movements of troops and their equipment, precisely timed and executed. However, the limitations of the majority of present MATS aircraft seriously limit the size of USCONARC-STRAC Forces which can be deployed to distant overseas destinations in acceptable periods of time.

MATS-USCONARC direct relationship advantageous. Success of the exercise was attributable in large measure to the close and direct relationship maintained between USCONARC and MATS.

More exercises needed. Puerto Pine/Big Slam was the first exercise to test STRAC and MATS ability to deploy overseas large elements of STRAC. Since this exercise was at once a test and a training exercise, all STRAC and MATS personnel gained valuable



Artillerymen of 79th Infantry Division stand inspection by Maj. Gen. Rinaldo van Brunt as they prepare for the Army-Air Force maneuver.

experience in what could, without warning, become an emergency operational requirement. Similar large-scale mass airlift movements should be conducted on at least an annual basis, or more frequently if funds permit. In addition several smaller scale exercises should be planned and operated to overseas areas.

In a few hours vehicles of 101st Airborne Division were transported from March slush of Fort Campbell to airfield in semi-tropical island of Puerto Rico.





With battle equipment, Sgt. Sutcliffe of 79th Inf. Div. weighs in at 275 pounds as he prepares to board aircraft.

Conduct of a minimum of one annual large-scale air mobility exercise is imperative to maintain an acceptable readiness posture for STRAC.

Civil airlift not appropriate for movement of STRAC or other combat forces. In the event of an actual emergency operation involving the movement of

STRAC or other combat forces to potentially hot combat zones, only a ready military force in-being could be counted on or expected to do the job. Therefore, under existing policies it is not practical to include civil airlift in exercises such as Puerto Pine/Big Slam.

MATS augmentation by Air National Guard/Reserve tanker squadrons. Airlift of Army petroleum requirements would provide added mobility when transported in tanker aircraft for delivery into portable "quick-erect service stations" at off-load points. This would provide greater flexibility to the forward combat forces. As tanker aircraft become excess to requirements of the Air Force, they should be assigned to the ANG/Reserve and attached to MATS to augment the airlift force and perform this petroleum transport mission.

Prior joint planning is required in air mobility training exercises to:

- assure maximum use of available airlift to train maximum numbers of units;
- evaluate effectiveness of STRAC air mobility techniques, procedures and training;
- exploit, improve or develop new techniques in marshalling area operation and movement control functions;
- foster development of joint policies and standardization of air movement procedures and terminology.



Troops unload from MATS aircraft just landed at Ramey Air Force Base in exercise testing STRAC ability.

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Turbo-powered helicopter is flown to Puerto Rico in test of air mobility potential of STRAC forces.



USCONARC Views

FURTHER conclusions advanced by USCONARC made the point that Puerto Pine/Big Slam was a routine air mobility exercise for the preponderance of STRAC elements, except for the operation of the staging areas. The exercise utilized only portions of STRAC units located throughout continental United States—a fact which posed significant and complex problems which would not normally be present in moving a balanced force retaining maximum unit integrity.

Furthermore, USCONARC concluded, any strategic air mobility exercise involving Army forces should always be integrated with destination airfield staging followed by marshalling for an airborne and airlanded assault tactical exercise.

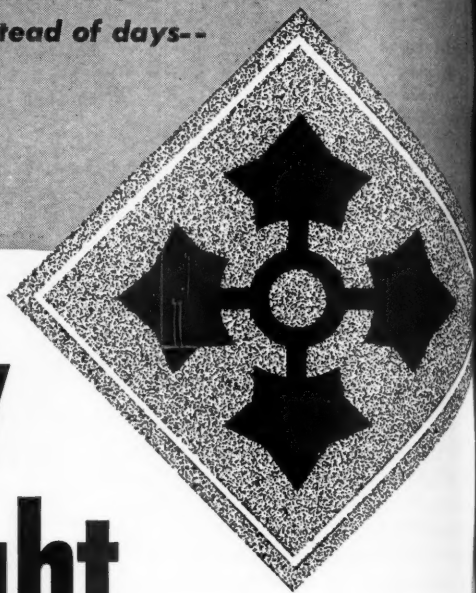
THE active phase of Puerto Pine/Big Slam concluded 28 March but the organizational, operational and training lessons learned will continue to furnish practical case studies for Army and Air Force planners for many months to come.

Besides men and aircraft, ground mobile equipment was airlifted. Here a Mechanical Mule is loaded into a C-124 by 101st Airborne Division troops.



A close-up of the "Famous 4th" brings into focus a STRAC unit that clicks with shutter speed, its reaction time measured in hours instead of days--poised, primed and

Ready To Fight



Major General Louis W. Truman

JUST one decade ago, in July 1950, America's military position in Korea verged on imminent disaster. Without strong reinforcements arriving quickly from continental United States, the defenders would be driven off the peninsula, and the war in Korea perhaps lost before we could really begin to fight.

Against this backdrop, the 2d Infantry Division at Fort Lewis, Washington—then the most combat-ready division in CONUS—was alerted for oversea movement.

But even in this crisis, it was late July and early August before the division could board transports in nearby Tacoma. Although the 2d Division was a finely trained, active Army unit with tremendous spirit, it was only the heart of a battle-ready force. It was far understrength. Reinforcements had to be drawn from service units and rushed through refresher training. Equipment had to be built up to combat levels. Countless administrative tasks had to be accomplished before departure.



TODAY, the 4th Infantry Division is "on deck"—just as the 2d Division was a decade ago. But there is an important difference. This prime infantry arm of the Strategic Army Corps (STRAC) will not require a month to get ready if an emergency comes.

If movement is to be by rail or

sea, the 4th Infantry Division will be underway in less than 96 hours.

If it is to be by air transport, move-out time will be a great deal less. These timetables presume, of course, that the necessary transport will be made available when needed. In any event, the "Famous 4th" will be ready to move and ready to

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Readiness Training

IN 1960, the soldiers of the 4th Infantry Division and their airborne partners in the Army's Strategic Army Corps are a model of preparedness—probably the most genuinely combat-ready force ever created in the United States in peacetime.

And while today's complex world situation could produce a limited conflict almost anywhere on the globe, which could expand into a general war, the experience of a unit trained for service in one climate and then called upon to fight in another cannot happen with the 4th Infantry Division.

Training of the Division has spanned almost every extreme of the climatic and geographic spectrum, from the wind-whipped sands of the Mojave Desert to the frozen plateaus of central Alaska. During the past two years—ever since it was announced as a member of the elite STRAC team—the Division has prepared with studied thoroughness for every operational possibility—ground, amphibious, airborne and all their combinations.

In the first five months of 1960 alone, units of the Division logged

record-setting mileage on maneuvers. Among the mileposts:

JANUARY: 1st Battle Group, 12th Infantry airlifted to Alaska's Big Delta country for Exercise Little Bear. The "Warriors" smashed Aggressor forces amid swirling snow and metal-snapping cold.

FEBRUARY: 1st Medium Tank Battalion, 34th Armor and elements of the 1st Battle Group, 22d Infantry, were flown to Camp Irwin, California, for special desert warfare training. The tankers fired their high-velocity weapons and practiced small-unit tactics before taking part in Exercise Mesquite Dune.

MARCH: 2d Battle Group, 39th Infantry, the 4th Howitzer Battalion, 42d Artillery and other supporting units of a battle group task force were airlifted 9,000 miles round-trip to Puerto Rico. The division troops loaded out some 1,100 tons of weapons and gear on C-124 and C-133 cargo planes as their share of the Nation's greatest peacetime airlift exercise, Puerto Pine/Big Slam.

Also in March, the division's entire CPX group took part in a joint Army-Navy-Air Force amphibious exercise, Bay Island, held at Solo Point where Fort Lewis jets into Puget Sound.



MAJOR GENERAL LOUIS W. TRUMAN, Commanding General of the 4th Infantry Division from 1958 to 1960, is currently assigned to Headquarters U. S. Continental Army Command, Fort Monroe, Virginia.

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At the Cold Weather and Mountain School, author sees at first-hand how his troops train to meet winter warfare.



MAY: Exercise Elk Horn, an 18,000-man joint maneuver conducted on the rugged volcanic slopes of the Yakima Firing Center, sent the full division into action for a climactic test of its fighting skill. Action raged for two weeks as soldiers of the Famous 4th fought Aggressor invaders on simulated atomic battlefields. For the first time, the 150-mile convoy movement over Washington's Cascades passes was made under tactical conditions with the exercise play starting at Fort Lewis. C-123 troop carrier planes air-lifted the 1st Battle Group, 8th Infantry directly to the Yakima Firing Center. At the Selah Springs landing strip, the men charged off the aircraft into immediate action.

All-Purpose Training

ALONG with these special exercises, the division maintained its regular training schedule. Monthly Command Post Exercises tested the ability of commanders to plan and direct operations in the field. Each battle group was in the field a week

preparing for its annual Army Training Test, then another week for actual testing. Snow and then drenching rain challenged the Division's physical hardness, but all of its battle groups earned "excellent" ratings from umpires.

Throughout the Division's training, emphasis has been on speed and mobility. Air transportability, usually conducted with special loading ramp mock-ups, is continuous. Airlift operations are preceded by intensive equipment loading practice.

Preparation for rail movement receives equal attention. Each quarter brings surprise full-scale practice alerts, now called "assembly test exercises," with mobilization for departure. Units pack and crate all equipment, using metal Conex containers for much of their gear. Each outfit actually loads representative vehicles and heavy weapons aboard flat cars at the Fort Lewis railhead.

Less detailed assembly test exercises are held much more often, involving personnel muster and other



"The soldiers of the 4th Infantry Division and their airborne partners are . . . probably the most genuinely combat-ready force ever created in the U. S. in peacetime."

steps in the departure "count-down." The scramble to straighten out personal affairs is gone. Men in the Division are required to take care of such matters as wills, powers of attorney for wives and other family arrangements now—not when the Division is alerted.

In short, this is a Division that is ready to go anywhere, anytime, to meet and destroy any aggressor.

Leaders and Commanders

TWO former commanders share credit for achieving the 4th Infantry Division's present peak of battle readiness. Lieutenant General Paul L. Freeman, Jr., now assigned as Deputy Commander, Reserve Forces, Headquarters, U. S. Continental Army Command, was commander in 1956, when troops of the 2d Division and an escort group, which brought the Ivy Leaf colors from Germany, were reorganized as the 4th Infantry Division at Fort Lewis.

Major General William W. Quinn, now Army Chief of Information, commanded the Division from January 1957 to June 1958.

Under his leadership, the Division was reorganized as a pentomic force and announced as a primary unit in the new Strategic Army Corps.

I assumed command of the Division in August 1958, and directed it in an intensified training program which began with Exercise Rocky Shoals, a joint task force amphibious assault landing on the California coast near San Simeon.

During my command, the Division participated in Exercise Dry Hills at Yakima Firing Center in May 1959 and in the giant STRAC CPX, Dragon Head, in North Carolina in the fall of the 1959 training year. The Division also completed Exercise Elk Horn in May, a reinforced Division maneuver, at the Yakima Firing Center.

Successive Assistant Division Commanders have been Brigadier General John H. McGee and Brigadier General William O. Blandford. Brigadier General Robert H. Adams commands the Division Artillery and Colonel William Donaldson is Division Chief of Staff.

Proud History

AN important factor in the 4th Infantry Division's emergence as a powerful force, instantly ready for service anywhere, is its unusually high morale. On the foundation of pride in distinguished service in two World Wars has bloomed a new esprit-de-corps—a fierce pride in achievement and the motivation that stems from being part of a unit pioneering the techniques of Atomic Age ground combat.

The 4th Infantry Division soldier today has to be tough, intelligent and trained in a multitude of complex skills. He is aware that he is part of the "first team" and proud of it. He talks of the "Triple F"—the Fighting, Famous Fourth—and will assure you it is the finest Infantry Division in the United States Army today.

And in reflective moments, his glow of pride is reinforced by a fighting record that sparkled with achievement in the crucible of war. With startling regularity, the Fourth was the division that was "first"—first to crack the Hindenburg Line in World War I, first ashore on Utah Beach on D-Day, first U. S. troops to enter Paris, and first to set foot on German soil in the closing days of World War II.

THE "Famous Fourth" was organized at Camp Greene, North Carolina, in 1917, and sailed for Europe in May 1918. Its first casualties were 56 men lost when the British liner *Maldovia* was torpedoed by a U-boat near the Isle of Wight.

The date 5 June 1918 was "D-Day" for the 4th in World War I. Its doughboys fought in the campaigns of Aisne-Marne, St. Mihiel,



Maneuvers keep the men trained to razor edge, ready for any eventuality. Typical was Elk Horn where some troops were air lifted . . .



. . . and heavy equipment went by rail as the full Division moved into action for a climactic test of skill on "atomic" battlefield.





Assault from the sea is part of the training designed to prepare troops to meet any conditions that may arise in future.

Meuse-Argonne, Lorraine and Champagne. They suffered 12,820 casualties in 69 days of combat, including more than 2,100 killed in action.

The Division helped smash the Germans' last great drive and was hailed as the "Savior of Paris." In five months of battle, the 4th destroyed 16 German divisions.

Major General George H. Cameron was the Division's first commander, and led it during much of the fighting in Europe. After the Armistice, the Fighting Famous 4th

stayed on for seven months' occupation duty in Germany before inactivation on 21 September 1921 at Camp Lewis, Washington.

From Benning to Bad Tolz

FRANCE was tottering and the Battle of Britain flamed in the skies over Dover when the 4th was recalled to arms on 1 June 1940. Intensive training at Fort Benning, Camp Gordon, Fort Dix, Camp Johnston and Fort Jackson preceded its embarkation for England on 18 January 1944.

In full battle array, tanks of 4th Infantry Division move out to spearhead a column of combat-ready troops against an Aggressor enemy during field exercises.



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Dressed in their distinctive jungle-green uniforms, a contingent of Aggressor troops looms up on rugged high ground to test readiness of Division on a field maneuver.

Troops of the Division's 8th Infantry Regiment were among the first to smash ashore at Normandy with the 12th and 22d Infantry Regiments only hours behind. Brigadier General Theodore Roosevelt, son of the famed President, was the Division's Assistant Commander during the invasion. He was posthumously awarded the

Medal of Honor for his heroic leadership in Normandy.

Ivy Leaf soldiers—soon known to the Germans as “the men with the terrible green crosses”—spearheaded the drive on Cherbourg. A month later, they led the breakout at St. Lo after savage fighting in the hedgerows.

A 4th Division regimental com-

Well-camouflaged troops lie in wait near forest trail ready to strike at unsuspecting foe advancing to “attack.”





Division Day visitors at Fort Lewis receive a graphic demonstration of how troops are trained, view new weapons such as the M48-A2 medium tank with flame thrower.

bat team stretched the U. S. advance line to Paris on 25 August. On 11 September 1944, soldiers of the 4th became the first Allied troops to enter Germany. A larger force of the Division breached the Siegfried Line soon afterward.

The Division was the heart of the Allied force in the Battle of the Hurtgen Forest, bloodiest single fight of the European war. It faced four Nazi divisions. Gains of 500 yards were the product of super-human effort. One battalion lost four commanders in one day.

But on 1 December 1944, the last enemy line of defense was shattered and the way to Cologne and the Ruhr lay ahead.

One grim interlude, the Battle of the Bulge, interrupted the victory drive. The brunt of the Germans' desperate counter-blow fell on the 4th Division. Cooks, clerks, MP's—every possible man—were

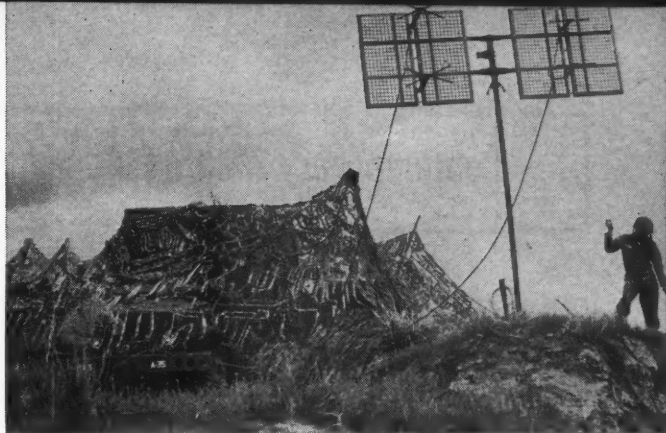
used on the line as the 12th Infantry and other units threw back the attack on their positions. By New Year's Day 1945, remnants of the Nazis' proud 212th Division withdrew, utterly defeated, and the rout of the enemy was on.

By late April, the Division advance reached Munich, chalking up a bag of 50,000 prisoners along the way. On VE Day, the Division halted its drive at Bad Tolz, just six miles from the Austrian border.

On 10 July 1945, the 4th Division sailed proudly past the Statue of Liberty, bearing with them two gifts from the people of Paris to the people of New York. One was a section of the iron gate that bounds the famed Tuileries Gardens, the other a scarred stone cornice from the Hotel Crillon—fitting mementoes of one of the 4th Division's most triumphant hours.

On 12 March 1946 the Division

A divisional headquarters radio relay is camouflaged against "enemy" eyes during playing of Exercise Elk Horn.



was inactivated at Camp Butner, North Carolina. The next year on 15 July, it was reformed as a training unit at Fort Ord, California, and became a combat division based at Fort Benning, Georgia, on 10 October 1950.

In April 1951, it was sent to Germany as the first United States addition to the NATO force.

Elk Horn Record

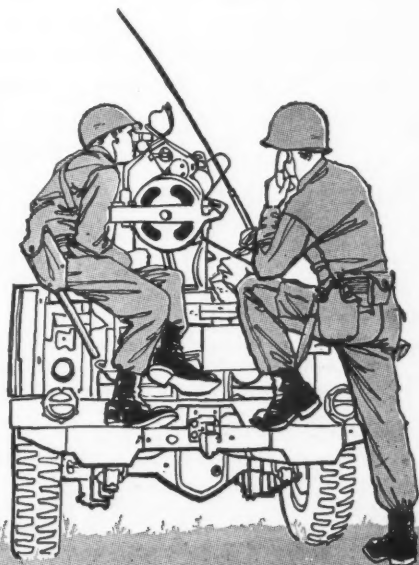
SINCE being reorganized at Fort Lewis in 1956, the Division has advanced through a constantly increasing tempo of training and combat preparation, culminated by Exercise Elk Horn last May.

Lieutenant General Robert M. Cannon, Sixth U. S. Army Commander, who was also Maneuver Director, called the 4th Infantry Division's performance "outstanding" and declared that it had proved itself ready to fulfill any combat assignment it might receive. General Bruce C. Clarke, Commander of U. S. Continental Army Command, stated that he was especially impressed by the demon-

strated ability of the Division to operate effectively both as an integral force and as widely dispersed combat teams.

A few days following the maneuver, I relinquished command of the Division. Major General William F. Train succeeded as Commanding General, coming to Fort Lewis from service in U. S. Army Europe.

Upon that occasion, it was a proud moment to be able to say, without reservation, "Here, Sir, is one of the finest divisions in the United States Army."



Recoilless rifle mounted on quarter-ton vehicle provides infantry with hitting power.

Contemporary Military Reading Program

Book List Revised

TO ASSIST Army personnel in keeping themselves currently informed on military affairs and matters of national and international interest, the 1960 list of books in the United States Army Contemporary Military Reading Program has been published. Selections were made by the staff of Army War College.

The program has a four-fold objective—to stimulate constructive thinking concerning problems of prevailing and future military importance; to encourage Army personnel to engage in a systematic program of voluntary reading; to furnish guidance in the selection of reading material; and to make copies of these books readily available for loan to military personnel. Details of the program are contained in Department of the Army Circular 28-7, 15 June 1960.

Copies of all books on the Program list will be available for loan through facilities of Special Service Army libraries. Military science

reference libraries in each major command and technical service also will augment installation libraries in support of the program. Those not having ready access to library services may arrange for loan of books from the nearest Army installation library, with direct correspondence authorized between any individual and the Post Librarian concerned.

The Army Contemporary Military Reading Program was established in 1958 through the direct efforts of the Army Chief of Staff, and the first list was published in the December 1958 ARMY INFORMATION DIGEST.

The following 1960 list of recommended reading, it is emphasized, does not imply indorsement of any author's views and interpretation by the Department of the Army. Rather it signifies that the listed book contains a thoughtful presentation of facts, analyses and viewpoints worthy of attention by Army members.

RECOMMENDED READING LIST FOR 1960

MILITARY OPERATIONS

Panzer Leader by Heinz Guderian. Dutton, 1952, \$10.

Combat Actions in Korea by Russell A. Gugeler. Association of U. S. Army, 1954, \$5.

Atomic Weapons and Armies by Ferdinand O. Miksche. Praeger, 1955, \$5.50.

MILITARY HISTORY

Military Heritage of America by R. Ernest and T. N. Dupuy. McGraw, 1956, \$10.

Command Decisions by Kent Greenfield, ed. Harcourt Brace, 1959, \$5.95.

West Point Atlas of American Wars by Vincent J. Esposito. Praeger, 1959, \$47.50.

ROCKETS AND SPACE

Rockets, Missiles and Space Travel by Willy Ley. Viking, 1957, \$6.75.

- Guided Missiles in War and Peace* by Nels A. Parson. Harvard, 1956, \$3.50.
Developments in Military Technology and their Impact on U. S. Strategy and Foreign Policy by Johns Hopkins University. (Senate Foreign Relations Committee Study No. 8), 1959.

PHILOSOPHY OF WAR

- Century of Total War* by Raymond Aron. Doubleday, 1954, \$5.
Arms and Men by Walter Millis. Putnam, 1956, \$5.75.

PSYCHOLOGICAL WARFARE

- Psychological Warfare* by Paul M. A. Linebarger. Association of U. S. Army, 1955, \$6.

U. S. FOREIGN POLICY

- Principles of International Politics* by C. O. Lerche. Oxford University Press, 1956, \$5.

WESTERN STRATEGY

- Military Policy and National Security* by William W. Kaufman. Princeton, 1956, \$5.
Strategy in the Missile Age by Bernard Brodie. Princeton University Press, 1959, \$5.
Limited War by Robert E. Osgood. University of Chicago, 1957, \$5.
NATO and American Security by Klaus Knorr, ed. Princeton University Press, 1950, \$6.

U. S. INSTITUTIONAL PROBLEMS

- The Great Arms Race* by Hanson Baldwin. Praeger, 1959, \$2.95.
The Uncertain Trumpet by Maxwell D. Taylor. Harper, 1960, \$5.
Soldier and the State by Samuel P. Huntington. Harvard, 1957, \$7.50.
The Direction of War by Kingston-Edward J. McCloughry. Praeger, 1957, \$4.
Arms and the State by Walter Millis and others. Twentieth Century Fund, 1959, \$4.50.
Government and Science by Don K. Price. New York University, 1954, \$5.75.
War and Peace in the Space Age by James M. Gavin. Harper, 1958, \$5

U. S. POWER

- War Potential of Nations* by Klaus E. Knorr. Princeton, 1956, \$5.
An Introduction to Economic Reasoning, rev. ed. by Marshall A. Robinson and others. Brookings Institute, 1959, \$3.
America as a Civilization by Max Lerner. Simon and Schuster, 1957, \$10.

THE U.S.S.R.

- How Russia is Ruled* by Merle Fainsod. Harvard, 1953, \$7.50.
Soviet Strategy in the Nuclear Age by Raymond L. Garthoff. Praeger, 1958, \$4.50.
Soviet Image of Future War by Raymond L. Garthoff. Washington Public Affairs Press, 1959, \$2.50.
Inside Russia Today by John Gunther. Harper, 1958, \$5.95.
What We Must Know About Communism by Harry and Bonaro Overstreet. Norton, 1958, \$3.95.
Protracted Conflict by Robert Strausz-Hupe and others. Harper, 1959, \$3.95.
"The USSR and Eastern Europe" Columbia-Harvard Research Group (Senate Foreign Relations Committee Study No. 11), Columbia University Press, 1960.

REGIONAL STUDIES

- The U. S. and Africa; 13th American Assembly Papers* by Walter Goldschmidt, ed. American Assembly, 1958, \$1.95.
The Middle East in World Affairs by George Lenczowski. Cornell University Press, 1958, \$5.50.

GENERAL

- Image of America* by R. L. Bruckberger. Viking, 1959, \$4.50.
National Strategy in the Age of Revolutions by George B. Huszar, ed. Praeger, 1959, \$6.
America at Mid-Century Series (Panels I-IV), by Rockefeller Brothers Fund. Doubleday, 1959, \$7.5.
Draper Committee Report (President's Committee to Study the U. S. Military Assistance Program) House Document #215—two parts, 1959.

**Graduated from Service School—received commendation
—promoted—performed some newsworthy feat—
then Army Home Town News Center helps**

Tell The Folks

TO THE time-honored criteria as to when an individual's name is certain to be mentioned in his home town newspaper—at birth, marriage and death—add another in these modern times—when he achieves something newsworthy in the Army.

Performing the job of boosting morale of the serviceman and increasing interest of his friends and relatives in his Army career is the dual mission of the Army Home Town News Center, Kansas City, Missouri. Established in 1951 and now operating as a Class II activity of the Office, Chief of Information, the Center receives a steady flow of material from information officers in the field, processes it to insure that each story is appropriate in style and content, and then dispatches it in immediately usable form to appropriate news media.

Thus the Center serves both the unit information officer no matter where he may be in the world, and newspapers and other publications such as industrial house organs or local radio or TV stations desirous of receiving news about individuals from their areas.

The home town release may be in the form of a news story about

some individual, a tape recorded interview, or even a short film for TV use. In any case the News Center helps the field information officer in five important ways—by simplifying procedures, evaluating material, providing guidance and instructional material, eliminating duplication of personnel and facilities at the unit information office level, and above all by preparing material for release that is consistent and of a professional quality demanded by editors.

THE Army Home Town News Center today serves some 12,000 news media. Each is placed on the mailing list as a result of surveys or by direct request. Nothing is sent unless the outlet has requested the material. The roster of agencies served includes daily and weekly newspapers, radio stations, television stations and college, trade and fraternal publications. A continuous survey is made to determine their needs and ideas.

Frequently releases are tailored to meet a specific request, especially in photographs and taped and filmed interviews. When a special request is received, field information offices are notified and the re

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Pt. Benjamin Harrison, Ind.
Army Pvt. Michael C. Dickerson,
son of Mr. and Mrs. Henry C.
Dickerson, 2725 Kitchen St., Corpus
Christi, completed the postal op-
erations course, recently at the

**SOLDIER EARNS
PARATROOP WINGS**
(AHTNC) — Army Pvt. Kenneth
E. Jones, 19, son of Mr. and Mrs.
C. C. Jones, Route 3, Bessemer,
Ala., recently was graduated from
the 82nd Airborne Division Jump
School at Fort Bragg, N. C. Jones

Army Pvt. F.
Mr. and Mrs.
130-39 226th.
member of the
sion in Korea
The 7th is
combat divisio
ained in Kor
o War.
Spinner, an
gunner in Com
ion's 32nd In

**Tommy Gates
Training At Ft**
Army Pvt. Tom
son of Mr. and
Gates, Thomasville
Completed



sulting material is processed and sent on to the "customer."

Desirably, some information about the Army, usually something specific about the individual's unit, is included in each release. Thus the Center provides information both about the individual, his accomplishments or participation in some newsworthy event that reflects credit on himself, and also background information on the unit's mission, history, utilization of weapons and manpower, and the like.

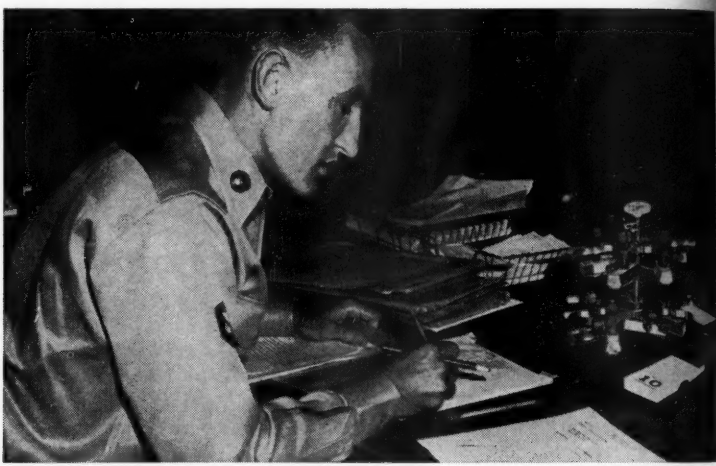
To perform its mission efficiently, the Center is organized into six

branches—administrative, editorial, pictorial, radio, television and production. Material is swiftly evaluated and edited, then processed and sent to the proper outlet.

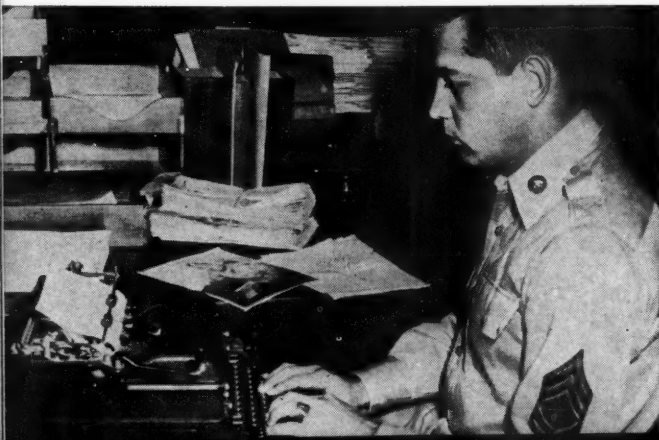
On a personal level, the individual items which appear as a result of the Home Town News Center efforts have a double-barreled effect: They impress the individual soldier with the fact that he is not just a number or a cog in a vast impersonal machine, and they make the soldier's community aware of the Army's mission and its role in national defense.



From all over the world, the mail brings material to Home Town News Center, telling of activities of individuals.



Swiftly the raw material is routed to the desk of a news editor, who sets to work organizing it for the various sections where it will be processed.



Writers then screen and draft story guides as outlines to prepare the finished releases for various news media.

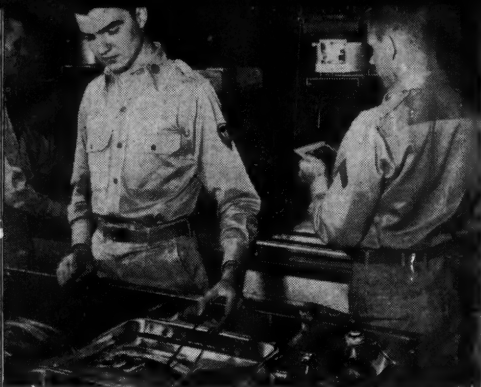
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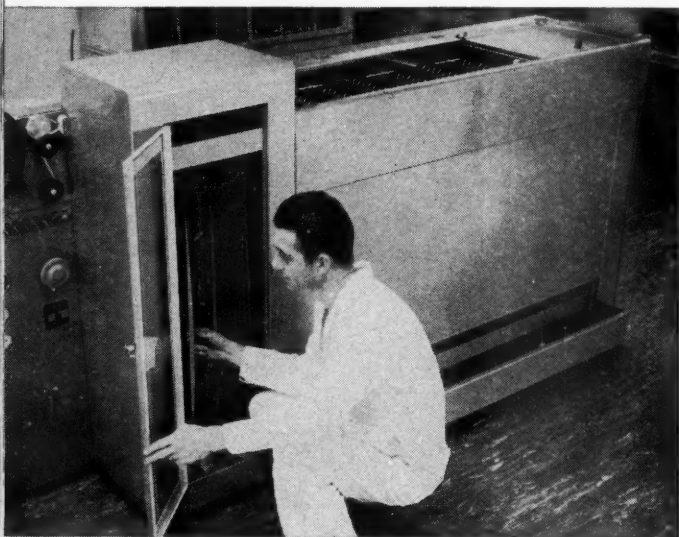


Release is now written,
left above. It gets
careful proofing, right
above, and then goes to
reproducing machines.





In well-equipped photo lab, left, pictures or negatives are processed to accompany releases. At right, plastic engravings are turned out for those papers which use them.



Film interviews for television stations are first processed through an automatic film developer, then edited and mailed.

Taped interviews are checked in Radio Branch and dubbed onto reels, left below. Finally, all completed material goes to the mailroom, right below.



ARMY INFORMATION DIGEST

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NEWS

of professional interest

Pershing Mobility

Demonstrating its battlefield mobility, the Army's new Pershing ballistic missile was recently successfully fired from its self-contained transporter-erector-launcher (TEL) mounted on the XM-474 full-tracked vehicle. All the missile's test objectives were met in the firing at the Atlantic Missile Range, Cape Canaveral, Florida, marking the sixth success in as many tests.

Proficiency Pay

About 7,000 enlisted personnel will be placed in P-2 proficiency pay status by the end of Fiscal Year 1961. Carrying an extra \$60 per month, the number of P-2 ratings by MOS will be established by Department of Army. They will be awarded in MOS that are most critical to Army requirements. Unit commanders have authority to award P-2 proficiency ratings to those who have held a P-1 rating continuously since January 1960 and who are assigned and utilized in accordance with paragraph 9b, AR 611-208.

Armor Leadership

A trust fund, known as the Draper Combat Leadership Trust Fund, has been established to provide recognition of outstanding leadership in the Armor branch by granting awards to tank companies, tank troops or Armored Cavalry troops. A "One Army" concept competition, the annual awards will be open, starting in calendar year 1961, to the Active Army, Army National Guard and U. S. Army Reserve. Individual awards also will be provided to selected students at the U. S. Army Armor School on their graduation, based on demonstrated professional proficiency and leadership. Details are outlined in AR 672-73, 15 June 1960.

Hercules Replaces Ajax

Replacement of 15 Nike-Ajax missile batteries with the new Nike-Hercules missiles will go into effect at metropolitan areas of Washington-Baltimore, Los Angeles, Philadelphia, New York, San Francisco, Chicago and Detroit. Nike-Hercules batteries presently located or planned for deployment at seven Air Force bases and at Hanford, Washington, will be re-deployed to provide coverage for these metropolitan areas. Modification of sites to accommodate the Hercules missiles is expected to begin soon.

Research Reactor at Reed

A nuclear research reactor capable of providing short pulses of intense nuclear energy will be built under an agreement between the Army's Diamond Ordnance Fuze Laboratory, Washington, D. C., and the General Dynamics Corporation, San Diego, California. The unit will be used for study of radiation effects on components of military equipment. It will be installed within a year in the Forest Glen section of Walter Reed Army Medical Center, Washington, D. C.

Missile Activities to NASA

An important segment of the Army's rocket and missile development organization at Redstone Arsenal has now been transferred to the National Aeronautics and Space Administration. Some \$100,000,000 worth of buildings and equipment at Huntsville, Alabama, and Cape Canaveral, Florida, are involved. About 4,700 Civil Service employees of the Army were transferred to the Space Flight Center. While NASA will manage the Center's programs, the Army will continue to provide specific services under reimbursement agreements.

News of Professional Interest

Missile Site Construction

A Ballistic Missile Construction Office has been established in Los Angeles, California, by the Corps of Engineers. The new office is set up to further streamline, strengthen and expedite construction at intercontinental ballistic missile sites, including building of Atlas and Titan squadron sites at various bases.

Vantage Point Radar

A new portable radar system designed to look far behind enemy lines to provide photographic plots of battle information has been developed for Army combat troops. Sweeping enemy-held territory in a 25-mile half circle, the system will provide periodic photo plots that will detect movement and help determine whether an enemy buildup, attack or withdrawal is impending.

The entire system including antenna weighs about 600 pounds. Officially designated as the AN/TPD-2, the system is based on designs originated by Project Michigan. Experimental models were built by Strand Engineering Company, Ann Arbor, Michigan. The first model has been turned over to the Army Combat Surveillance Agency of the Army Signal Corps for field experiments.

Army-Made Diamonds

IN ITS continual search for improved electronic materials for use in rockets and other high temperature devices, synthetic diamonds have been made by the U. S. Army Signal Research and Development Laboratory, Fort Monmouth, New Jersey. The diamonds were produced in the Laboratory's Institute for Exploratory Research by a process independently developed there. Other organizations, including General Electric Company and the DeBeers Consolidated Mines Ltd., have synthesized diamonds for industrial or electronic uses.

Largest crystals produced by the Signal Corps laboratory so far are about a sixteenth of an inch long. To make the diamonds, a pellet of graphite is placed in a bore of a tiny, compressible, heat-resistant mineral cylinder, then metal pellets which react with the graphite under heat and pressure are pushed into each end of

Battle Zone Telephone

A newly developed front-line telephone system without wire lines or cables now is under procurement with award of a \$10,935,410 contract to Motorola Military Electronics Division, Phoenix, Arizona, by the U. S. Army Signal Supply Agency, Fort Monmouth, New Jersey. The system is designed to provide switched radio service to battle areas very much like conventional telephone service. The radio central will be mounted in a weapons carrier on a $\frac{3}{4}$ -ton truck while "subscriber" stations, transmitters and receivers, will be installed in $\frac{1}{4}$ ton or armored personnel carriers. A single sideband provides added channels of information and more communications system in a given zone.

New Building Material

Use of glass fibers to produce concrete structural elements, both reinforced and prestressed, has been developed by the U. S. Army Engineer Research and Development Laboratories, Fort Belvoir. The newly patented method, developed by Mr. Solomon Goldfein of the Laboratories, is expected to be used where light weight, corrosion resistance, absence of magnetic field, and electrical resistance are important factors.

the bore, and metal disks placed on top. Next, this small container is placed in a two stage pressure chamber, and subjected to pressures of 1,250,000 pounds per square inch at temperatures up to 3,000 degrees Fahrenheit. After cooling, acid is used to dissolve the metal, and the diamonds are recovered from the residue of unconverted graphite. The synthetic diamonds' similarity to nature's hardest substance has been confirmed by X-ray studies.

The development stems from the Laboratories' search for substances having unusual electronic, magnetic or optical properties including "solid-state" semiconductors which may do the job of vacuum tubes and other components by controlling the flow of electricity within a crystalline solid. While diamonds ordinarily are poor conductors of electricity, their characteristics can be modified in synthesis.

Photography Contest

The 1960 All-Army Photography Contest will be conducted in November with the Commanding General, First United States Army as host commander. Winning entries in the All-Army contest will be submitted for competition in the worldwide 9th Interservice Photography Contest to be held in December when Department of the Army will serve as host. Details of the competitions are outlined in Department of the Army Circular 28-5.

Nurse Corps History

Records, personal letters, old journals, speeches or photographs relating to activities of the Army Nurse Corps are being sought by the U. S. Army Medical Service as source material for the "History of the United States Army Nurse Corps," now in preparation. Individuals possessing any material that might be helpful are requested to forward it to Director, Historical Unit, USAMEDS, Forest Glen Section, WRAMC, Washington 12, D. C. Material will be returned if desired.

Missile-borne TV

A Redstone ballistic missile was launched in June into the longest ballistic overland trajectory ever attempted in the United States. The Redstone carried a "flying TV station" more than 120 miles from the firing site. The television camera, designed to give battlefield commanders an aerial view of the target before, during and after impact of the missile warhead, functioned perfectly for the third time in as many tests at White Sands Missile Range. The device was developed under technical direction of Army Signal Corps.

Military Communications Link

A single radio circuit channel—the only such link established by the Army with a foreign government—was opened on the 100th anniversary of the U. S. Army Signal Corps in June. The direct high-frequency radio circuit line ties into the Army Communication and Administrative Network terminal at Davis, California, and connects with the Australian Military Forces terminal at Melbourne.

**For your convenience,
you may send the Digest home . . .**

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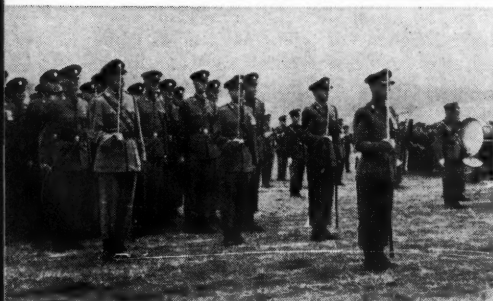
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People-to-people on parade—

Allied Military Units Join in

Canadian Queen's Own Rifles



German 5th Reconnaissance Battalion



King's Own Yorkshire Light Infantry



U. S. 3d Battalion, 14th Armored Cavalry



FOR THE seventh consecutive year, the 3d Battalion, 14th Armored Cavalry Regiment this June played host to allied military units in an International Day program which demonstrated the friendship, solidarity and goodwill of NATO forces before throngs of spectators at Bad Hersfeld, Germany.

Symbolizing the unity of free peoples under the NATO standard, the event brought together military units from Belgium, Canada, Germany, United Kingdom and United States. Among the highlights were a pass-in-review of each contingent, followed by a military demonstration and a tug-o-war. The program was opened by invocations by the chaplains of each nation and ended with a retreat ceremony.

Joining with the 3d Battalion, 14th Armored Cavalry Regiment were the Queen's Own Rifles Band of the Canadian Army, the German 5th Armored Reconnaissance Battalion and the 2d Panzer-grenadier Band; the Belgian 2d Reconnaissance Battalion and I Corps Headquarters Band; and the British 4th Royal Tank Regiment, Royal Tank Regiment Rhine Band, and 14th/20th King's Hussars Band.

Since the idea to hold an "International Day" was originated by the 3d Battalion in 1954, the event has attracted increasing public attention, with as many as 18,000 spectators on hand.

Belgian 2d Reconnaissance Battalion



n International Day"

Banners of Belgium, Canada, Great Britain, West Germany, the United States float over the International Day celebration events.

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